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Southern Medical Journal

Journal of The Southern Medical Association

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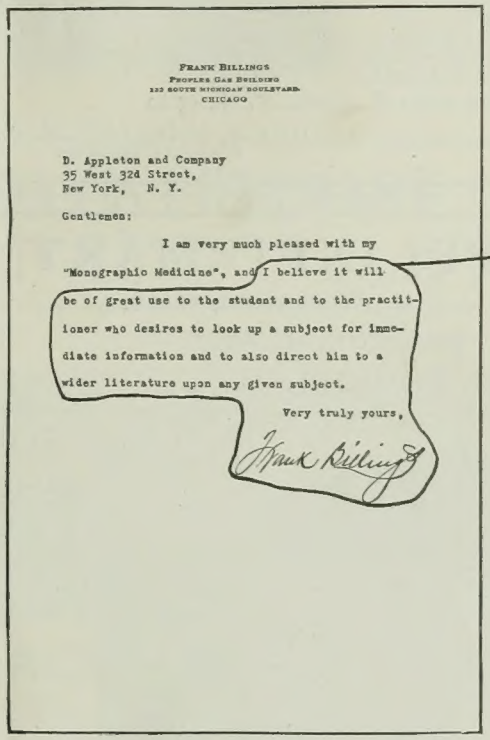

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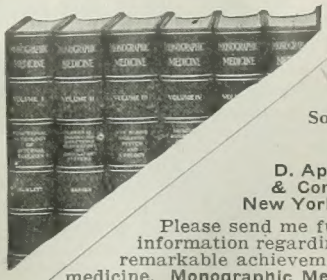

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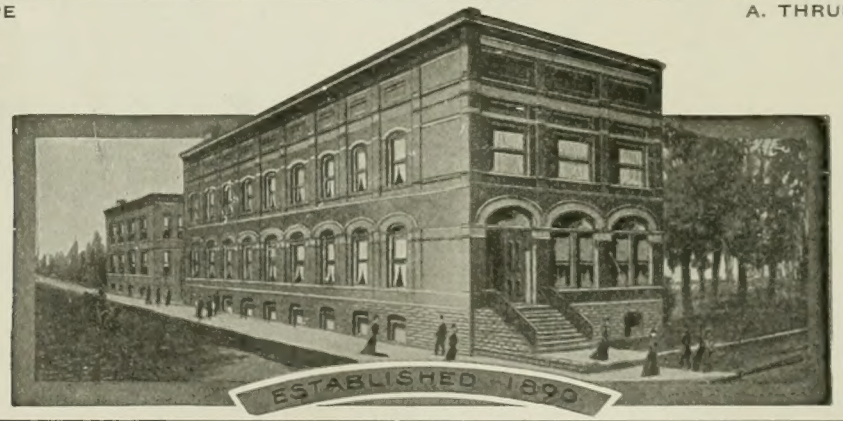

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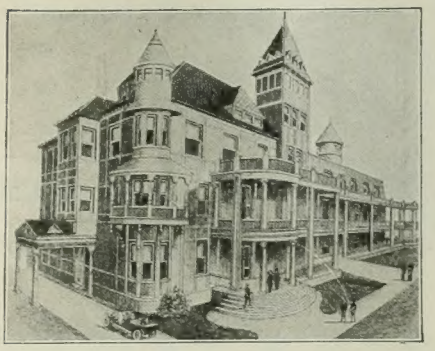

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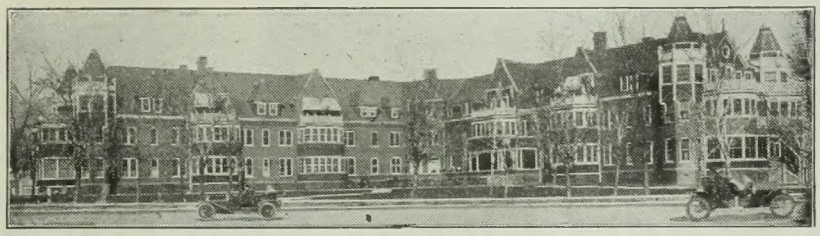

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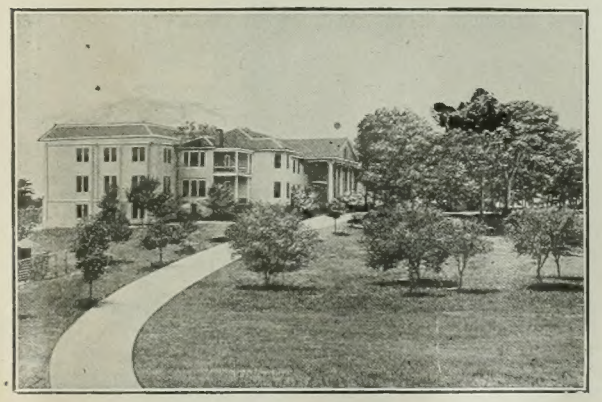

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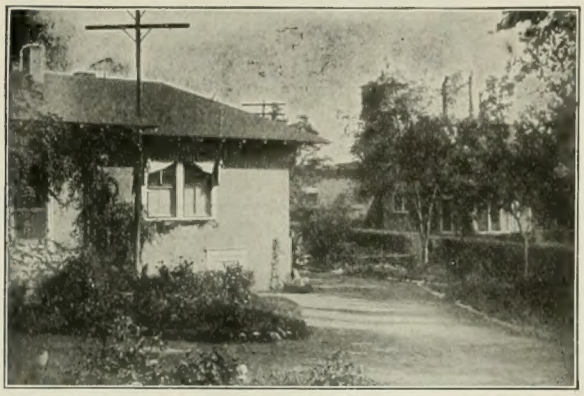

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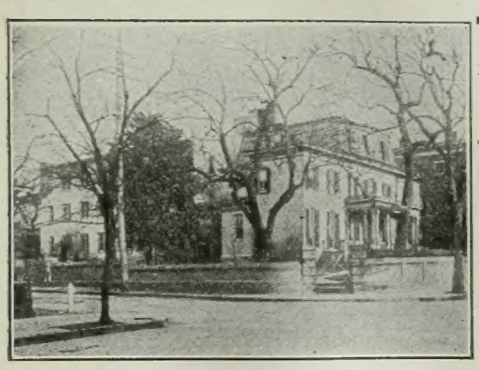

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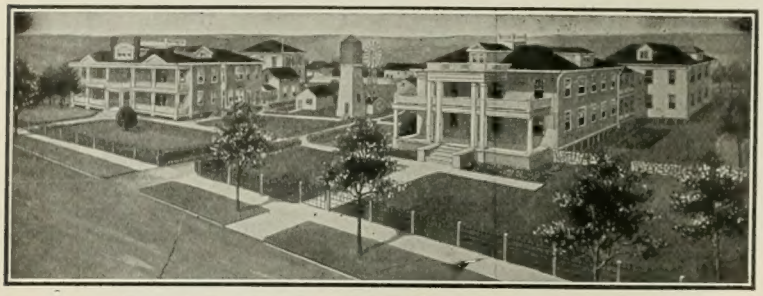

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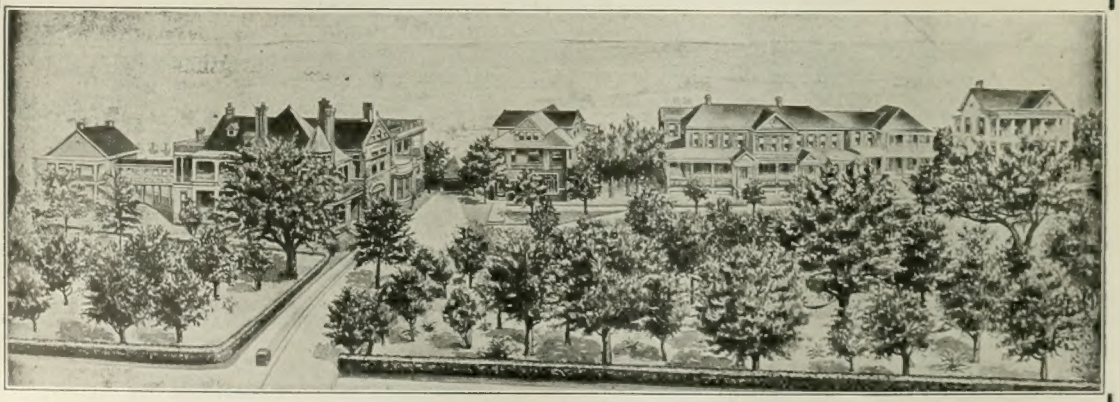

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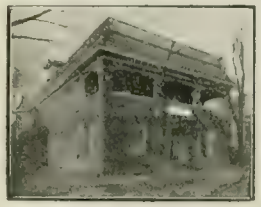

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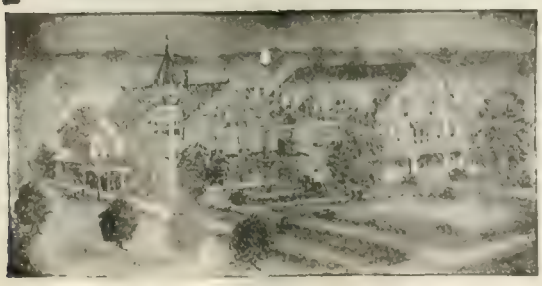

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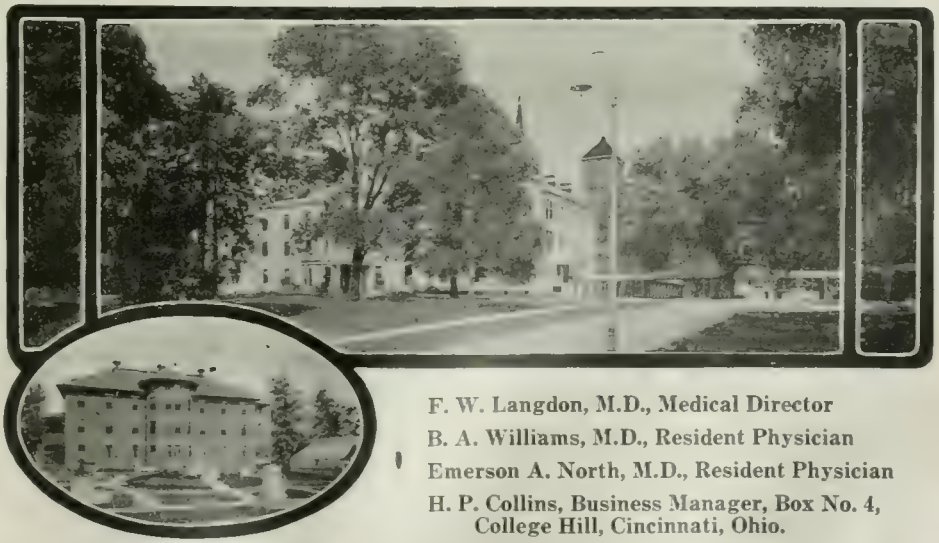

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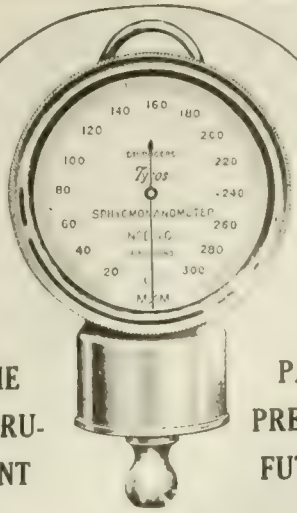

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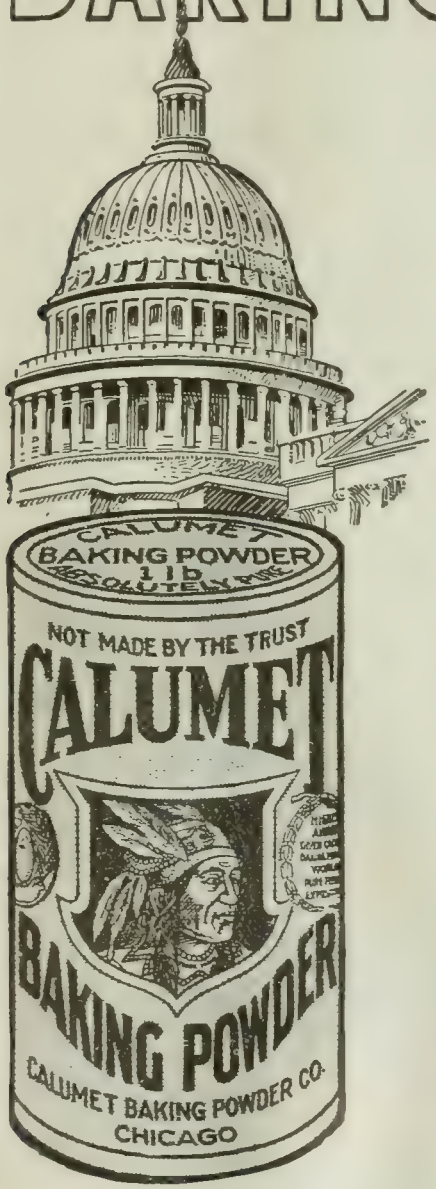

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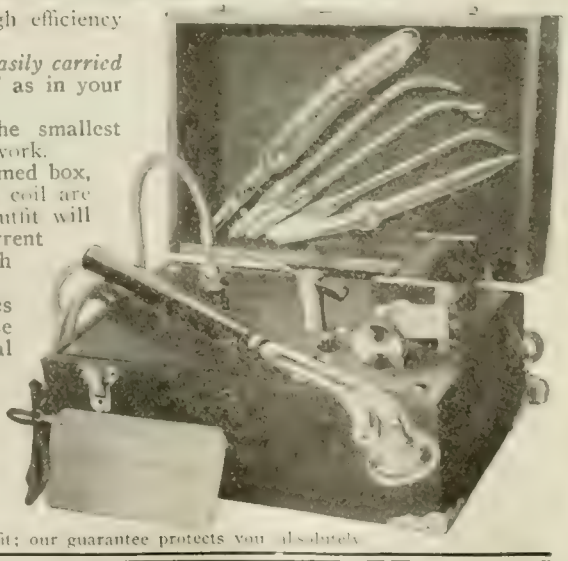

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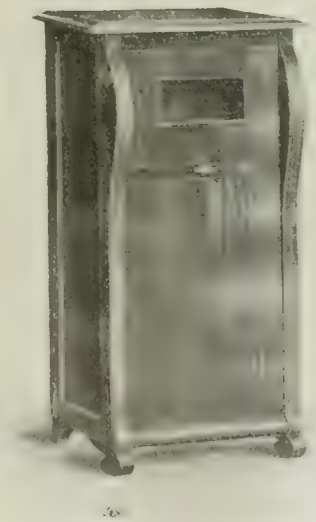

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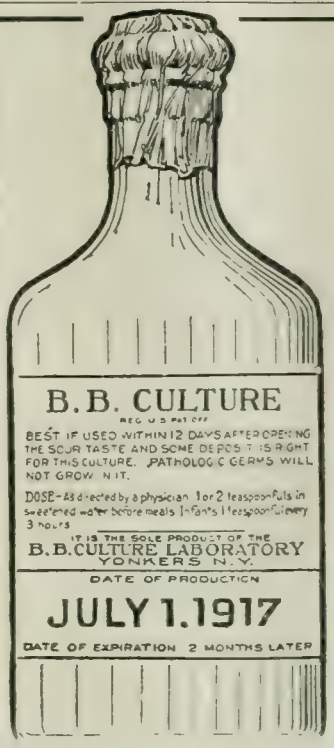
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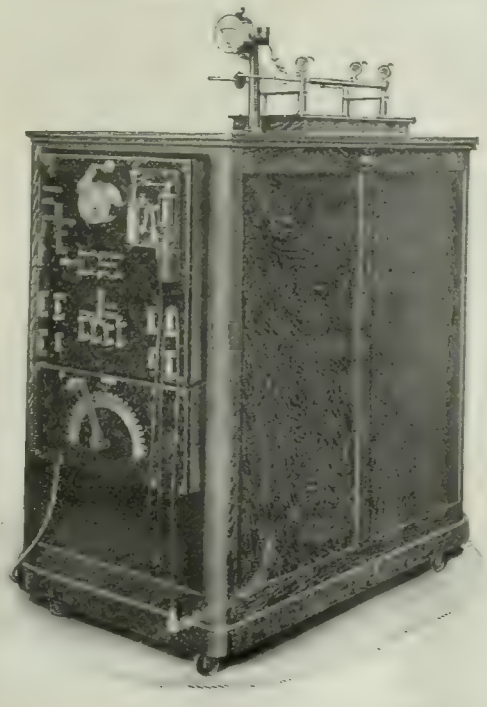

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MEDICINE

(INTERNAL DISEASES, PEDIATRICS, NEUROLOGY, DIAGNOSTIC METHODS, ETC.)

THE UNWARRANTED FEAR OF TUBERCULOSIS*

By Charles Hartwell Cocke, M.D.,
Asheville, N. C.

When that fatalism which accepted *consumption* as the inevitable mark of death gave way to the less hopeless if not general faith in the arrestability of tuberculosis, I sometimes wonder if not then was born the seed of the unwarranted fear of tuberculosis which we call phthisiophobia. So far as I can learn, phthisiophobia was nothing like so general before the recognition of the infectiousness of the disease as it became when public attention became focussed upon the problem of attempting to thwart and eradicate it. So long as the medical profession had scant comfort to offer the tuberculous patient save the temporary alleviation of his most distressing symptoms, there was an accepted fatalism about the disease, pathetic in its truth, which made the public look upon it much as upon fire, flood, and other providential dispensations. The end was inevitable when the course was begun, and much as in the Chinese proverb which has it, "The stork's legs are long, the duck's legs are short—you can not make the stork's legs short or the duck's legs long, why worry?" so the stricken members of the public bowed to the inevitable progress of hopeless consumption.

Then came the new light. The infectiousness of tuberculosis, long suspected, was definitely and specifically proved in 1882 by Koch's discovery of the bacillus. Immediately the question of the methods of transmission of tuberculosis was to the fore in lay as well as medical minds, and then really began the era of concerted effort to arrest and eradicate tuberculosis. It is not necessary to recall to this body the more or less heated arguments which have taken place since in regard to the methods of transmission, the role of contact in the spread of the disease, the part played by bovine tuberculosis in the spread of human tuberculosis, etc. Suffice it that though this era was coincident with a decided drop in the death rate of pulmonary tuberculosis, there arose in many minds, *medical as well as lay*, an unwarranted fear of tuberculosis which is still of such moment as to warrant the best and most constant and tireless efforts of every physician to combat.

As is so well demonstrated in LeBon's "Psychology of the Crowd," the popular mind is easily influenced by strong and repeated suggestions, which, under given conditions, unquestionably may involve pathological consequences. And so, with the echoes of medical disagreements regarding the contagiousness and widespread prevalence of tuberculosis (as demonstrated by more careful physical examinations and the use of delicate tests for ascertaining the disease), reaching the public, there was enough of doubt and uncertainty mixed with the evident truth to cause the public to react, as it always will, to the stimulus nearest it. We are

*Read in the Section on Medicine, Symposium on Tuberculosis, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

most likely to fear the evil nearest us—and here was more than excuse enough for a public whose response to suggestion and whose susceptibility is by no means the average or mean of its component parts. An excited profession, disputing over the communicableness of the disease, wild claims of almost universal *infection*, not distinguished from *clinical disease*, the ubiquitousness and world-wide dissemination of the bacillus and its transmutation forms, the existence and prevalence of bovine tuberculosis, and a dozen other mooted points only served to excite an eager, ignorant, public *curiosity* into a more ignorant *fear*. There is not a man in the room who has not seen the by-product or result of the first undigested dissemination of the knowledge of tuberculosis and how it is transmitted. Each one here has seen not once, but dozens of times, the patient whose fear of tuberculosis amounted at times almost to an obsession. Nor has he failed to see that other variant of this same unreasoning fear in a complete hopelessness of outlook in one in whom tuberculosis has been found. It is widespread, it knows no particular geography, no special type of mind; no age, sex, nor grade of social life or intellect escapes—it only differs in degrees—and is, I believe, and here let me state one of my contentions, *distinctly on the wane and less prevalent than it was*. I have seen it in old and young and frequently in middle life, very commonly in those to whom the prospect of months of expensive idleness and lack of proper means to sustain this means a blighting of life and business prospects. I find it worse, perhaps, in those whose position in life by right of education and social standing should make them more amenable to reason than in the poorer classes whose outlook is more or less tinged with the inevitable fatalism which colors their whole existence. It is found singly and in families, in groups and communities, and I dare say, in larger geographical distributions. It finds expression individually in fears of sleeping cars, boarding houses and possibly infected localities; in an individual disinclination to associate with a tuberculous person, in an unwillingness to visit certain resorts known to be more or less favorable to the tuberculous—sometimes in an emphatic refusal of a thorough examination for the determination of a possible focus. It finds further expression in some as a morbid antipathy to what they regard as a more or less moral or social leprosy. It is a stigma, as they think, a horrible mark borne only by the outcast—a loathsome shame—something to be denied and never mentioned—a blight to family and friends—a curse undeserved—almost a moral obliquity—it is a business and social crime. In communities we see the expression of it in segregation ordinances and restrictions upon the activities, harmless and otherwise, of those who have tuberculosis—in social ostracism and the closing of certain businesses to them—and lately, that most unusual regulation (it is not in the Medical Practice Act, I am happy to say) of the Oklahoma State Board of Medical Examiners, which requires of the applicant for license to practice medicine in the State the following affidavit:

> I, ..., a legally qualified physician in the state of....., certify that I have been acquainted with..... ....., whom I know to be the same person making the above application; that I have known.....for three years, and have made a thorough physical examination and find.....to be free from tuberculosis in any form. My state license is No. ..... .

I am glad to report to this body, however, on the authority of the present Secretary of the Board of Medical Examiners, that "While we require this, yet our Board is a safe and sane body and will perhaps [why the *perhaps*] treat every case on its merits."

I do not know why this regulation was passed nor in whose brain it originated. But if it be a stain on one's character to be among the unnumbered, past and present, tuberculous themselves, whose life and work have been given to the fight against tuberculosis and other diseases, who here would not be glad to stand among such men as Brehmer, Dettweiler, Laennec, Grancher, Trudeau and almost all his fellow workers in Saranac, and American medicine's most recent great loss, John B. Murphy, to omit the names of many in our own midst still doing useful and important work? Certainly, I would for one, and most gladly.

Granted, then, that an undue fear of

tuberculosis exists, is it warranted? *Emphatically, no.* Since this morbid fear of tuberculosis may with some justice be attributable to the contentions of the medical profession anent the contagiousness and ubuquitousness of the disease, as well as to newspaper and magazine propaganda, in order to demonstrate the unreasonableness of it, I shall briefly summarize the most generally accepted ideas of the present day in regard to these matters. But let me first absolve the parties to these earlier controversies of any motive save the most altruistic, if mistaken, attempts to save mankind from the ravages of tuberculosis.

While none will deny the possibility of direct hereditary transmission of tuberculosis, still, instances of this are so rare as to be of more interest in the pathological museum than in actual practice. An impoverished physique of undernourishment and perhaps a peculiar susceptibility, plus an environment admirably adapted for the acquisition of the disease, are of infinitely more importance in the transmission of the disease than is direct inheritance. Perhaps if we get entirely away from the word *contagious*, using in its stead *communicable*, we would be much nearer the present day conception of this phase of the subject. One does not get the *disease*, tuberculosis, from a chance contact with even an advanced tuberculous patient, from one visit to a room possibly known to harbor bacilli, or by being the unfortunate target of some careless cougher. The disease is usually acquired by prolonged exposure to infection which most frequently occurs in childhood, the opportunities of the child being so numerous and obvious as scarcely to necessitate mention. (Perhaps, there may be a massive infection with resulting disease.) And then this early childhood infection, so often latent, may not become *clinical* tuberculosis until years later. The *contagion* of such a disease as smallpox is far removed from the conception of *communicable* tuberculosis just mentioned. Again, if tuberculosis were the virulently *contagious* disease the sufferers from phthisiophobia picture it, long since had the race perished. That even those who come in daily and prolonged contact with the disease when it is properly controlled, such as sanatorium doctors, nurses and attendants, rarely contract it, is amply proved by the literature now available—and, though conjugal tuberculosis does exist, it is of sufficient rarity to make some observers claim that it is much less frequent in the opposite member of a union in which a known case exists than in the balance of the community. Also, it must be stated that the small amounts of tuberculous infection suffered in early life, and more or less repeated, actually have a relative immunizing effect, increasing the resistance to the disease in after life. Further, the ultimate survival of those who acquire a relative immunity will tend to diminish the severity of the disease. And Baldwin, who is my authority for the last statement, states in his Harvey lecture for 1915 that "adults withstand exogenous infection under extreme exposure," etc.

Statistics are interesting to but few, and I shall not weary you with the tables which show the decline in actual frequency of the disease of 50 % since 1885, and a decline in the death rate to a little over 150 per 100,000 of population from something nearly double that in the same period of time. For those who wish to consult the accuracy of these statements, I wish to refer them to the work of that careful statistician, Mr. Frederick L. Hoffman, of the Prudential Insurance Company, whose charts and paper on the "Decline of the Tuberculosis Death Rate" will repay perusal. In this connection, a statistical tabulation by this same author shows the collective results of 6,767 cases of tuberculosis treated in sanatoria, regardless of length of stay or method of treatment. The condition on discharge of the three classes of cases was as follows:

1. Incipient Cases — Apparent cure, 43.1 %; arrested, 30 %; improved, 19.6 %; unimproved, 6.7 %; died, 0.6 %.

2. Moderately Advanced Cases — Apparent cure, 10.0%; arrested, 29.2 %; improved, 38.6 %; unimproved, 19.4 %; died, 2.8 %.

3. Far Advanced Cases — Apparent cure, 0.4 %; arrested, 5.60 %; improved, 25.0 %; unimproved, 34.4 %; died, 34.6 %.

An eloquent and striking illustration of the necessity of early treatment—and at the same time an answer to the unwar-

ranted and hopeless fear of tuberculosis.

Each year medical men are learning better how to recognize tuberculosis early. Better means of diagnosis are being used; a more thorough dissemination among the profession of the means already at hand, the improved methods of X-ray investigation, the use of various biological, chemical and physiological tests; the campaigns of tuberculosis associations (National, state, county and local); health surveys in general, including such campaigns as the pellagra and hookworm investigations in the South, state board exhibits, lectures, demonstrations and motion picture plays; the establishment of tuberculosis dispensaries and sanatoria; the district nurse and the open-air school; and, lastly, the more thorough knowledge which the recent medical graduate has for the diagnosis of tuberculosis—all are tending to allay the harassing fear of tuberculosis which has disturbed so many a person whose knowledge of the disease was confined to a belief in its omnipresence and a hopeless outcome of the course of the disease. The public now knows in a measure that earliness of recognition is in most cases of prime importance in overcoming the disease—hence an abatement of the fear of it with the increased confidence in our profession to recognize it early.

Every day there goes back to some community to take up work and social activity some man or woman who has fought the fight against tuberculosis and won—a living witness of the arrestability of the disease, but unfortunately not often a vocal one against the distressing fear of it. Every one who returns home restored to health—or reaches this happy estate without the necessity for having to go away to acquire it — may become an apostle of hopefulness and helpfulness to others. He cheers his frightened or stricken friend on to faith and optimism. Thus can the gospel be spread, and I believe it will take effect. Undoubtedly the better results now obtained in the treatment of pulmonary tuberculosis, together with the early recognition of it, are playing the largest part in allaying the fear of it, for the public is mostly like the gentleman from Missouri—it believes what it sees. The work of such men as Trudeau and Murphy, who, despite years of active suffering with tuberculosis, yet fought on, each in his chosen sphere, to save suffering humanity—the one to blaze the way for the sanatorium treatment of tuberculosis, the other to add new lustre to the name of American surgery, is a lesson for all to read. I know of nothing more beautiful and helpful in all medical annals than Dr. Trudeau's presidential address before the Association of American Physicians on "The Value of Optimism in Medicine," written after his life work was done and his body was full of suffering—the supreme effort of an indomitable cheerfulness that never waned, the victory of a never-faltering zeal and faith.

In proof of the unwarrantableness of phthisiophobia, I need not recite here the results of the work of the National Association for the Study and Prevention of Tuberculosis and other tuberculosis societies, nor mention the activities of various boards of health, etc.—all contributing to the profession's and the public's better knowledge of what is tuberculosis, how it is contracted and how arrested. Each agency has its sphere of useful activity, and helps in the crusade which will never be won by fear.

Nor shall I attempt to enumerate the advances, large and small, of recent date in the treatment of pulmonary tuberculosis. But whoever or whatever adds aught to the sum total of aids in fighting tuberculosis at the same time adds another argument against the unreasonable fear of it.

Before this, I should have spoken of the fears some patients display on being told that they should enter a sanatorium. Chief of these is the fear of contracting more tuberculosis, an entirely unwarranted fear, usually readily overcome by intelligence and tact on the part of the physician. Next is the fear so common among certain patients who, despite extensive involvement in themselves with rather troublesome symptoms, are very certain that they will be annoyed and distressed by the sight and coughing of the other patients. A few days' rest and residence in the sanatorium usually suffices to dispel this fear, for there they see the cheerfulness and good fellowship and healthy looks of the sanatorium patients,

and the spirit of the place prevails to drive away the fears. And lastly, is the fear of social or business stigma attaching to those who have undergone institutional treatment. That there is ground for this fear is all too true, unfortunately, as any one with much experience with tuberculosis must admit. It can be overcome by a proper enlightenment of those who hold such views by showing that the *well trained patient* is infinitely more of an asset than a liability in a factory, office, store, or bank, as such a patient will by his example and insistence upon proper precautions help other careless fellow workers to take such means as to prevent the spread of infection, tuberculous or otherwise.

Having discussed the presence of phthisiophobia and the unwarrantableness of it, I shall briefly say how I think it may best be overcome. I do not think that I need enter any argument in favor of a concerted effort on the part of the profession to overcome such a real condition, for unfortunately it is a condition and not a theory with which we are confronted. I think the solution is within the hands of the general practitioner—it is in your hands that it must be found. You come in daily contact with the victims of this unreasoning dread. And you must do this by what you know of tuberculosis, and more especially by what you tell the people of it. Vague terms of contagion and infection should be simplified to an explicit distinction between a communicable disease acquired more or less laboriously and a real contagion such as smallpox. The public must be told, and much better by you, that, though the rule is for childhood infection, this by no means results in subsequent clinical tuberculosis invariably. Infection by prolonged contact must be explained so that the people may know how to distinguish (from the careful) and avoid the careless, ignorant and harmful spitter, cougher and kisser — and further appreciate that the careful patient may not only not be shunned, but may well be cultivated as an object lesson to the well in personal hygiene. The remarkable progress made in recent years in the prevention and treatment of the disease must be shown. The open-air school must be encouraged and weak and undernourished children and those of poor heredity should be given every chance for healthy development. Periodical examination should not be confined to children, for whom we hope some day to have universal examination in the schools, but should embrace every member of the family—at present a Utopian hope 'till socialistic medicine has made greater strides. The era of secrecy in medicine has gone never to return, and the public must be told the *truth* about tuberculosis. The proper teacher is the general practitioner, for he must preach that in its broadest sense the campaign for better health in general is the best means of preventing tuberculosis, and where the opportunity offers, as it does daily, he must give specific instruction.

After placing my own views on paper, I sent out an inquiry to about sixty well-known medical men, of whom only about twenty were especially engaged in tuberculosis work, asking if they found unwarranted fear of tuberculosis existing very generally, and, if so, whether this fear was as great as formerly or whether it was lessening. The replies are interesting, though coming from a limited number. Twelve men out of seventeen answering, engaged in tuberculosis work, found this fear still widespread but lessening, while out of the same number of men engaged in general work only six found the condition widespread, and nine thought it waning.

To the query as to what class (social and intellectual) exhibited the largest number of cases of phthisiophobia, there was about an equal number of both specialists and general men agreeing that the greatest amount of phthisiophobia was found among the social or upper classes—the better educated, supposedly—and five or more well known specialists definitely said there was altogether too much among the *profession* at large. This, I think, accentuates the point I made that both physicians and laymen have accepted half truths about tuberculosis infection and, to quote Baldwin of Saranac Lake, "In the name of sane living and thinking, why should an adult in reasonably good health have any fear of tuberculosis?"' To the question as to whether phthisiophobia

existed more among the well members of a family in which there was a known case of tuberculosis than among those in whom there is no tuberculosis, the specialists found that almost uniformly it was in the latter class, whereas the general man found it almost equally divided. From which I think the conclusion is reasonable that the specialist takes more time and trouble in explaining the truth about infection than the general man and that it is time the general practitioner was telling the people all the truth and not half-baked ideas. It was the equally divided opinion of the specialists that the social stigma (?) of the disease played an important part in the cause of the fear of it, but the general men were 11 to 4 against it — a division of opinion for which I have no adequate explanation.

On the part of both classes of physicians there was almost universal agreement that the past over-accentuated danger of infection to *all* people (instead of to children) was responsible for the general prevalence of phthisiophobia and that it was up to the general practitioner to overcome it—which is my thesis and excuse for calling your attention to the matter today. Let us have less "newspaper science," as Harlow Brooks wrote me, and more facts.

A NEW METHOD OF TREATING FLAGELLATE INFECTION OF THE INTESTINES

By H. L. McNeil, M.D.,
Galveston, Tex.

Flagellate infection of the human intestine is a common occurrence in the South. In the Medical Clinics of the John Sealy Hospital, Galveston, Tex., the incidence among adults averages about 5 %. This incidence is found, however, after the ordinary stool as obtained for laboratory examination, and not necessarily following a purgative. Undoubtedly, the routine examination of stools following purgatives would increase the percentage materially. Lynch,[1] Charleston, S. C., finds an incidence of flagellate infection following purgatives somewhere in the neighborhood of 20 %. Barlow,[2] in a study of the stools of 100 cases, after purging, found 25 % infected.

The flagellates met with by the physician practicing in the South are of three varieties. Most frequent of these three is infection with the trichomonas intestinalis, which is a small actively motile body, slightly oval or pear-shaped, averaging in size from about that of a white blood cell to perhaps two or three times that size, and possessing three flagellæ. An undulating membrane also is present. Neither flagellæ nor undulating membrane are easily distinguishable while the parasite is in active motion. Their presence is evidenced, however, by the constant motility visible at one end of the parasite. The flagellæ may be demonstrated by staining.

The cercomonas intestinalis is also occasionally found in the intestines, either alone or in combination with the trichomonas. It is smaller than the trichomonas, average in size about that of the ordinary pus cell. Grossly, upon first examination the two parasites are very similar, particularly in the fresh stool. The cercomonas possess only one flagellate and no undulating membrane. The parasite is always very actively motile in the fresh preparation.

The lamblia intestinalis, while a common inhabitant of the human intestine in some countries, particularly the far East, is rarely found in America as compared with the frequency with which the trichomonas is found.* The lamblia is characterized grossly by its fairly large size, averaging perhaps twice the size of the ordinary white blood cell, and by its comparatively sluggish and somewhat jerky method of locomotion, as contrasted with the unusually lively motion of the other flagellates. The lamblia, moreover, possesses a cup-shaped depression representing a rudimentary buccal opening, or sucking apparatus, by means of which it attaches itself to the epithelial cells of the intestine. A nucleus is visible at one end of the parasite and is somewhat dumb-bell in shape. Eight flagellæ are present, flagellæ springing from anterior and posterior ends as well as from the margin of the periostiom.

*Only three cases have been observed by the author during the past five years.

The pathogenicity of the flagellates has been the subject of much discussion in the past. Authorities are now agreed, however, that the average case of infection with either trichomonas or cercomonas exhibits absolutely no unpleasant symptoms attributable to the infection. There can apparently be no doubt, on the other hand, that under certain circumstances and under favorable conditions either of these parasites may become pathogenic, causing enteritis and diarrhea of a moderate severity (3, 4, and 5). Numerous reports are to be found in the literature of diarrhea caused either by trichomonas or by cercomonas infection. Out of our own series of individuals infected with trichomonas, studied in this clinic, consisting of forty cases, in only one case was it believed that symptoms, consisting of chronic dysentery of a mild degree, were caused by the infection.

The relation of infection with lamblia to symptomatology is much more definite, intestinal lesions being caused much more frequently by this parasite than by the other two. Numerous cases of persistent diarrhea, enteritis, colitis, etc., have been reported. Moreover, Fanthan[6] and others have shown very definitely that ulcerations and inflammatory reactions can be produced in both kittens and in mice by the ingestion of lamblia or by their injection directly into the intestines. Not all cases of infection with lamblia in the human being are pathogenic, however, some individuals carrying the infection for years or even throughout a lifetime without any serious symptoms being caused.

In view of the undoubted occurrence of pathogenic symptoms from flagellate infection in isolated cases, it becomes desirable, of course, to expel these parasites from the intestines whenever the infection is diagnosed. Unfortunately, such expulsion is a matter of the greatest difficulty. Since the normal habitat of the flagellates is the small intestine, most remedies designed to remove them are administered by mouth. The very multiplicity of remedies suggested for the treatment of flagellate infection is evidence of the therapeutic inefficiency of those treatments. Among the more common remedies suggested by various authorities may be mentioned the following: ipecac, emetine, beta--napthol, methylene blue, bismuth, salicylic acid, salol, thymol, cyllin, turpentine, guaiacel carbonate, colonic irrigations with iodin (1 to 1,000), terebenthine, and others. In our own hands none of these remedies has proved satisfactory, the majority of them not even influencing the numbers of parasites found in the stools after purging. It is true, as has been pointed out by numerous observers, that these parasites may disappear from the stools at any time, either without treatment or after treatment. Further study of such cases will show, however, that the infection has not disappeared from the intestines, for the administration of a saline purge will invariably cause the reappearance of the parasites in the stools in as great numbers as ever.

The most promising method of treatment in our hands after a trial of practically all of the remedies mentioned above has been the administration of methylene blue according to the method suggested by Castallani,[7] this consisting of the giving of from two to three grains, three times daily, accompanied by colonic irrigations with 1 to 5,000 solutions of the same substance. In at least one case treated after the method of Castallani by us a cure of a permanent nature has apparently been effected. Unfortunately, the treatment of Castallani is not invariably successful, since we have noted several very distinct failures from its employment. Moreover, the administration of methylene blue is not without danger, some individuals being easily poisoned by even moderate doses of the drug.[9] Also, in order to effect a permanent cure by means of this treatment it is necessary to persist in it for considerable periods of time; also, repeated courses of treatment are necessary as a rule, and even such persistent treatment is perhaps more frequently a failure than a success.

As a result of the great difficulty met with in ridding patients of their infections and of our frequent therapeutic failures, after the most extended and varied treatments, it occurred to us that since the flagellates inhabit the small intestines primarily, not infrequently occurring as high up even as the stomach

and duodenum,[10] direct irrigations of the duodenum with substances toxic to these parasites, but harmless to the patient, might be of therapeutic value. Accordingly, we first tried injections of dilute methylene blue solution (1 to 3,000) into the duodenum. It was found that this treatment alone was not curative, although a marked decrease in the number of flagellates in the stools was usually noted following it. Experiments *in vitro* showed that the addition of hydrochloric acid to a mixture containing these parasites, the hydrochloric acid being used in a dilution corresponding to the acidity of the normal stomach (0.5 %), caused their very prompt destruction. Also, it was found that among other substances, the addition of quinin to the solution caused apparently a more rapid and more deleterious effect upon trichomonads. A solution for duodenal irrigations was therefore made up as follows, and has been used on numerous cases during the past year:

Methylene blue (med. pur.)	grs. 5
Quinin Sulph.	grs. 20
Hydrochloric acid (conc.)	mms. 30
Aq. Dest. qs. ad	O 1.

The above solution is injected directly into the duodenum through a duodenal tube to which a funnel is attached. About ten minutes is required for the injection. (Any form of duodenal tube may be used. We prefer those forms possessing a small tip, however, since the smaller the tip the more rapid is the entrance into the duodenum; with a small tip, only about ten minutes are required for the passage of the pylorus.) The fluid is injected warm. There is absolutely no danger to the patient from such injections. As a preliminary to the treatment, it is advisable to keep the patient upon a liquid or semi-liquid diet for two days preceding the injection and to administer a saline purgative upon the preceding night. One such injection is given daily for three mornings, the last two injections, in an adult, being double quantity. Upon the evening of each day upon which an injection has been given, an enema of 1 to 5,000 methylene blue is given high up into the colon. After three such treatments the patient is allowed to go about his business, but is instructed to return at the expiration of one month for further examination. Upon his return a saline purge is given and the stools following this purgative are examined very carefully for the presence of parasites.

That the treatment outlined above is efficacious is evidenced from four apparently undoubted cures which we have obtained, three consisting of infection with trichomonas, and one being a patient heavily infected with lamblia intestinalis. A number of other patients treated by us in this way have been discharged apparently cured, but whether such cures were permanent could not be ascertained because of their failure to report for later examination.

Certainly it appears to us that this treatment, because of its innocuousness, its simplicity and its brevity, is worthy of further trial.

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BOTHRIOCEPHALUS LATUS INFECTION—REPORT OF A CASE

By M. D. Levy, M.D.,
Instructor, Clinical Pathology, Medical Department, University of Texas,
and
Dick P. Wall, M.D.,
Acting Assistant Surgeon, U.S.P.H.S., Galveston, Tex.

Comparatively few cases of bothriocephalus latus infection have been reported as occurring in America, although it is known that the infection is fairly common among the Finns of the Northwestern states. Singer,* in reporting a case in a Russian woman in St. Louis, was able to find records of only thirty other cases in American literature. While our case presents no unusual features, in

*Singer: J. A. M. A., 1916, Vol. LXVI., No. 21, p. 1618.

view of the fact that so few cases have appeared in the literature, we deem it worthy of report.

L. A., a seaman born in Finland, aged 32, presented himself to the United States Public Health Service complaining of a breaking out on the legs. For the past five years he has been living in this country. The history is negative except that he has been oppressed during the past year by a feeling of weakness at times, becoming tired after moderate exertion. For the past four years he has been passing segments of tape worm, at times as much as 15 feet, but as it never troubled him, he neglected taking treatment.

Physically the patient is well built, of fairly robust type, and of good color. Blood examination showed 3,240,000 red blood cells, 90 % hemoglobin, color index 1.4x, differential count negative, there being only 2 % eosinophiles. Stool examination revealed large numbers of bothriocephalus latus ova, as many as four ova appearing in one low power field.

Treatment was as follows: The patient was given nothing but liquids for two days, purged with Epsom salts, given no supper, and the next day was given the following mixture in one dose:

Fresh Ethereal Extract Male Fern	drachms ii
Calomel	grains ii
Syrup Simplex	drachms ii

This was to be followed in six hours by ½ ounce sat. sol. magnesium sulphate (hot), but one hour after taking the male fern two complete adult worms (the heads of both being easily seen) of the bothriocephalus latus type were passed. Each worm measured 24 feet. Slight nausea was complained of after taking the male fern, and since passing the worms the patient states that he feels like a new man and is ready for work. Stool examinations have since been negative for ova. Of some special interest perhaps in this case is the entire lack of subjective symptoms in a person harboring two large adult worms and presenting a blood picture simulating that of pernicious anemia.

We wish to express our thanks to the Surgeon-in-Charge, Dr. L. P. H. Bahrenburg, for permission to report this case.

PELLAGRA: ITS ETIOLOGY AND TREATMENT

By J. H. Graves, M.D.,
M.O.R.C., U. S. Army,
Waco, Tex.

The diet is no more important in pellagra than it is in tuberculosis, and many other wasting diseases, where nourishment is essential. Therefore, let us not be deluded into acquiescing to the dietary theory as *a cause*, but rather let us feed to overcome it as in any wasting disease.

Pellagra presents all the earmarks of an infection, at least a severe toxemia, which is shown first on the skin, as well as being also referred to the alimentary tract. We often see cases presenting little or no nervous manifestations, but never without at some time or other showing a digestive disturbance, associated with skin manifestations, usually first seen on the backs of the hands, feet and face.

It no more devolves upon me and those who believe as we do to disprove the diet factors as regards the etiology of pellagra than upon those who advocate it to disprove its infectious or toxic nature. Microscopic workers are daily subtracting from the cryptogenic, or so-called ideopathic diseases, and adding to infectious diseases. In private homes, 7 women to 1 man have pellagra. It is a house disease. Old men over 50 and children under 10 have it most. In insane asylums incidence in male and female is the same. Why? Because some insect gets at them in poorly screened institutions and homes.

If pellagra only attacked the poor, illy nourished, poorly housed, errors in diet might appear as *the* factor in causing it. But we have found that it attacks the rich and poor alike. The rich according to their exposure and individual resistance, just as do typhoid, tuberculosis and many other infectious diseases. For the same reason, there are more cases of tuberculosis among the poor than among the rich. More cases of malaria occur in direct proportion to exposure to mosquitoes and lack of ingestion of some malaria-killing drugs.

If eating an unbalanced ration caused pellagra, as pointed out by other observers, Serbia, Montenegro, Albania, Belgium and Mexico, as well as all the big cities the world over, might easily be almost annihilated from its ravages instead of by bullets. So, too, would it have been rampant in this country during the Civil War and during droughts, where corn and syrup were consumed as the main diet.

In tetanus the organisms never reach the blood, the toxins do. So, too, in pellagra, we believe that some micro-organ-

ism infecting the lymphatic system, in some way reaching the chyle or lymph, may produce toxins in a similar manner, which, when absorbed, produce the symptom-complex seen in pellagra. Hence we have not found it as a separate entity, because the lymphatics are little understood and seldom ever investigated separately by researchers.

We believe that if the very earliest or incipient symptomatology of pellagra could be accurately known, it would have a definite prodromal period followed by thermic manifestations similar to other infections, or that it would present the definite symptom-complex seen in several toxemias, symptoms according to the amount and nature of toxins introduced into the individual patient. If a wasp, yellow jacket, or honey bee were to sting one on the back of both hands every night for a week what would happen? Do this for eight or nine months in the year, what then?

Pellagra is a real disease, an infection or severe toxemia, caused most likely by the bite of mosquitoes. In my observation two varieties deserve especial notice, culex and aedes calopus. The culex seems to fit the requirements better than any other, but the aedes calopus is not yet to be discarded. This insect (culex) is essentially a house mosquito, breeding in filth. It will and does breed in sewer pipes or in the liquid or fluid contents of closets, latrines and open cesspools, such as are found in outlying districts of all our Southern towns and in rural communities. Therefore improved sewage disposal reduces the incidence of pellagra by destroying the breeding places of this mosquito. It does not thrive in cold climates. Hence we find pellagra more often in warm countries and in such climates as furnish a favorable habitat for the culex mosquito. Of mosquitoes taken from pellagrins' homes, the only one identified proved to be aedes calopus, or yellow fever mosquito.

Thus far I have not classified the mosquito responsible for pellagra, but work could be done on this, and with not so very much expense. I have treated many cases of pellagra, and every one of these has been bitten repeatedly by mosquitoes.

In this country, where pits are dug under privies, these pits are excellent breeding places for culex mosquitoes. If the winters are severe enough to freeze these pits, then a winter resort for adult culex mosquitoes and their larvæ is destroyed until spring comes. Mosquitoes evidently have some very close association to pellagra, and I believe produce it.

The incidence of pellagra increases enormously in May, June, July and August in all countries. Does this argue for or against mosquitoes as carriers of pellagra? In Waco, Tex., there courses a little creek filled with filth, and along this creek we find a great number of cases.

Pellagra may simply be due to a toxin-compound, exchanged by mosquitoes for human blood. This toxic substance causes blood or serum to be attracted by chemotaxis to the proboscis of the mosquito as she bites or stings her victim. Then, after repeated stings over many days, months, or even years, the dermatitis and toxemias seen in pellagra follow.

A smudge composed of tobacco and sulphur upon which a little alcohol may be poured to cause it to burn, is recommended to kill adult mosquitoes in the houses. This should be done systematically. Coal oil should be kept in these pits always, a complete covering of the liquid portion should always be seen in these pits. To kill adult mosquitoes seen resting on the sides of the pits on damp walls, a board covering and the same smudge as above used, ever so often or just as often as other mosquitoes find their way into these pits to breed and to tide over the winter, which in the opinion of the writer preserves infected adults for the easy propagation in the spring of pellagra all over the world where mosquitoes thrive unmolested.

I believe arsenic is antagonistic to the disease and that, if administered *early* enough in the disease, in proper form, in proper dosage and in the proper manner, and over the required length of time, it is very useful.

What, then, is essential in the administration of arsenic in pellagra? *First of all, recognize the disease early,* and second, administer the right form of *arsenic,* in the *proper dosage,* and in the *proper way* (intravenously or intramuscularly), over the *required time.* Given an incip-

ient, uncomplicated case of pellagra, I believe I can, if possible to get proper nourishment and care, show you a living patient five years hence! Even in complicated cases, take them as they come, 85 to 90 % get well under treatment, but a very small per cent. will die in spite of all or any known treatment. Third, give the dosage over a long period and at regular intervals (every three to ten days). I reserve the privilege of giving it every other day, every three days, or every five days, and in seven grain doses, or we may reduce it to 1½ grain ampules. Some patients seem to assimilate the cacodylate better from muscle. The muscle we usually select for the injection is the deltoid, but in very thin patients this won't do, as the muscle is flabby. Then I select one of the glutei. The form of arsenic I prefer is the cacodylate of sodium, either intravenously or intramuscularly. For an adult, at first, I use the three-grain ampules. In intramuscular use I sterilize and plunge the needle deeply into the muscle, and this is repeatedly periodically over a long time. Some few times I have had induration at the site of puncture. This yielded to 25 % icthyol ointment. In adults, the intravenous administration of the cacodylate is far superior and is not so painful. Children from three to twelve years old can take 3 grains all right, but it would be better to start them on a smaller dose, say ¾ to 1 grain, increasing fairly rapidly.

Arsenic may be only a tonic. If so, it is a good tonic. If the patient is anemic, I use liquid blaud, with strychnia or without, as indicated.

In some of the more advanced cases of pellagra I confess I do not know what this simple form of treatment will do. To my mind, it is exactly analogous to tuberculous treatment. How many of us would give a hopeful prognosis in tuberculosis with cavities, and probably complicated with syphilis, nephritis, amoebiasis, uncinariasis or what not? How many of us would give a favorable prognosis in general paresis associated with pellagra?

We should have stools thoroughly analyzed by competent microscopists always and treat any case according to the findings. Now, as to the bowels. In pellagra you must keep them in condition, because, as already stated, if you are dealing with an infection, or even a severe toxemia, would it not be rational to put the patient's bowels at rest in a splint, as it were, without locking up the secretions with opium or otherwise, for here is where your auto-intoxication would come in. "Auto-intoxication" is a misleading term to me, and I object to the acceptance of it as is generally done. I doubt that there be many cases of real auto-intoxication where bacterial effluvia is not mainly responsible for the toxic effects seen, such as headache, nausea, mental confusion, etc.

Small doses of castor oil every night is good treatment. It helps to prevent an accumulation in the intestines, and thus prevents absorption by the intestines of the toxins. If this arouses too much peristalsis, then reduce it to every other night, or even once or twice a week. We often find these patients with a bad diarrhea, and if the oil disagrees with them we give them a normal saline enema, slowly, into the bowel (Murphy drip). This replaces the lost fluid from excessive diarrhea and aids the kidneys and skin to eliminate toxic materials and assists the liver in a similar manner, in that not so much is thrown into it for transformation. Your patient will find this grateful and you will find her looking brighter, more hopeful and, withal, better for its use.

One of the things I consider most important in caring for the patient is the diet. A bland, non-irritant diet is, of course, better during exascerbations. I use and endorse the blood foods or protein diet and plenty of vegetables, and have always advised it. Another is *rest in bed* during the active exascerbations, and to keep the patient *out of the sun all the time*, and last, but not least, are screens and other important hygienic surroundings and environment. Screens should be 14 mesh mosquito-proof bar. Every case of pellagra should have a bar over the bed, even in screened houses.

If my cases are among well-to-do people, I advise them to spend June, July and August in an ideal climate, or as nearly so as can be found. I often find pellagra among well-to-do people, contrary to usual reports. I prefer a cool climate, the cooler the better. In other words, get

them where mosquitoes do not thrive. A change of environment is quite beneficial; it induces appetite, it cheers them up and gives them, by contact with strangers, who know nothing of their ailment, a new lease on life.

In the treatment of these cases my experience has been that it is unwise to keep them in the dark as to their condition. It is better to tell them frankly that you are sure they have the disease if you really are sure. This refers to patients over fifteen years of age and who are sound mentally.

AUTHORS' ABSTRACTS

Medicine

Light as a Cause of Disease. Thos. W. Murrell, Richmond, Va. Virginia Medical Semi-Monthly, Vol. XXI., No. 22, February 23, 1917, p. 558.

The only essential difference in the body of the Caucasian and the Negro is the excessive pigment screen in the latter. This screen makes the Negro immune to actinic effect of light. Light irritation causes degenerative keratoses which are precancerous. The true black is therefore practically immune to epithelioma. There are skin conditions which are not met with in the Negro such as psoriasis and xeroderma pigmentosum which suggest light as a possible cause for these conditions. The author has never seen a true case of vesicular eczema of the face, the type called milk crust, in a pure black Negro baby. While protein anaphylaxis is unquestionably a partial cause in many of these cases it is suggested that sunlight be considered as a further irritant.

Alkaline Treatment of Early Gall-Bladder Carriers, with Observations on Their Detection by Aid of the Duodenal Tube. Henry J. Nichols, El Paso, Tex. The Journal of the American Medical Association, Vol. LXVIII., No. 13, March 31, 1917, p. 958.

Gall bladder carriers include carriers of the typhoid group of organisms, cholera carriers and probably also bacillary dysentery carriers. Experimental work in rabbits shows that after intravenous injections of typhoid bacilli, the gall bladder is infected through the bile from the liver, and not by emboli in the gall bladder wall as is the case with streptococci. Therapeutic efforts to prevent or cure early gall bladder carriers should therefore be directed to the bile. Alkalinity of the bile favors its antiseptic action and the reaction of the bile can be made more alkaline by sodium bicarbonate by mouth. Early carriers can be most easily detected by examining the duodenal contents obtained by an Einhorn duodenal tube (Hess, Garbat).

Ten cases of recent recovery from typhoid were examined in this way and one carrier was found. Ten cases of paratyphoid also included one carrier. Both were treated by 100 grains of sodium bicarbonate daily for ten days and a second examination was negative. Neither case is considered decisive because they might have cleared up without treatment. The treatment must be tried on a number of cases of different duration in order to test its value; but it is suggested for trial as having some experimental basis.

Roentgen-Ray Treatment of Exophthalmic Goitre and Hyperthroidism. C. A. Simpson, Washington, D. C. Washington Medical Annals, Vol. XVI., No. 2.

The author reports his results in the treatment of 18 cases. These are not included in the 28 cases reported in *The Southern Medical Journal*, October, 1916. Technique and dosage are published in the *Medical Record*, Sept. 4, 1915. In the 18 cases reported there were 4 failures, one of which was operated upon, and died the day of operation. This case had carcinoma of the thyroid gland, so it should not count as a failure.

Another point made in the report is that most of the cases were very toxic and many of them had been refused operation for this reason. When surgical results show a cure in over 60 % I find upon investigation that the cases are more or less selected and less toxic than many of mine. The author confines his statements concerning etiology to quotations from reports by Kocher, Nordman, Garrie, Crotti and *The Bulletin of the Johns Hopkins Hospital.* The varying etiological factors and theories, which by the way seem to change from year to year, have no more influence upon the results following Roentgen ray atrophy than upon those resulting from surgical removal of portions of the over-secreting gland The objects of the two treatments are the same, namely, the destruction of enough of the secreting area of the gland to counterbalance the overproduction of iodin. No matter what the etiology is, the symptoms are due to too much iodin in the circulation. Surgery relieves the symptoms by excising portions of the over-active gland, many times resulting in a fatality.

X-ray accomplishes the relief of the symptoms by atrophying the thymus and thyroid without danger, drugs or rest in the most toxic cases. The action of the Roentgen ray is based upon what every medical man, especially Roentgen therapeutists, is supposed to know, namely, the selective action of the ray and the radio-sensibility of the tissues treated. It is this action that gives us our results in the treatment of cancer, etc. Every European and American who has had any experience will agree that the thyroid in hyperthyroidism becomes more radiosensitive than the normal gland. In addition to the atrophic action of the ray the results may be aided by an inhibitory action upon the sympathetic nerves that supply the gland. That the ray does have an effect upon nerve endings can be proven by its well-known ability to relieve the pain of cancer and the itching of pruriginous skin lesions.

If the Roentgen ray has no effect on exophthal-

mic goitre, how could it change well-marked cases of Graves' disease into typical cases of myxedena?

What except the action of the ray could cause the thickening, adhesion and sclerosis of the capsule and trabeculæ of the gland which every surgeon claims occurs in all cases of Graves' disease that have had pre-operative Roentgen ray treatments?

Valvular Lesions in the Aged. Graham E. Henson, Jacksonville, Fla. The Journal of the Florida Medical Association, Vol. III., No. 8, February, 1917, p. 225.

Valvular lesions of some sort exist in the great majority of the aged. In a great many instances they cause no subjective symptoms; in fact, are not likely to so long as a compensatory hypertrophy exists. It should be borne in mind that the detection of a most pronounced murmur or murmurs, accompanied by even great hypertrophy of the cardiac muscle and displacement of the apex beat, is not necessarily a factor in the ailment that has caused the aged patient to seek consultation and advice. Having detected a valvular lesion in an aged person, even though at the time it may not be a factor in an existing illness, it should not be ignored; and although at the time it may not call for active therapeutic measures, prophylactic measures for maintaining the existing compensation should be carefully considered.

In considering the treatment of valvular lesions in the aged, it is especially imperative that to a large degree a waiting, watchful policy should be assumed in so far as active therapeutic measures are concerned.

Careful attention should be paid to the examination of the heart in the aged patients. Their span of life may be materially lengthened if the time be taken thoroughly to familiarize one's self with the condition of their cardiac function. The days of compensation may be prolonged by careful prophylactic measures, and when compensation is lost, life may still further be prolonged by the careful and intelligent administration of therapeutic aids. On the other hand, by slipshod diagnostic methods the days of compensation may be shortened and the crisis still further hastened by the administration of contraindicated drugs.

Radium Therapy. Frank E. Simpson, Chicago, Ill. The Radium Quarterly, Mallers Building, Chicago, Vol. I., No. 1, January, 1917, p. 1.

In this article the author strikes a conservative note in his remarks upon the relation of radium to the cure of cancer. Cancer of the skin is usually curable by radium, but cancer of the deeper structures may lead frequently to death by the development of secondary deposits, although the primary growth can often be relieved. Interesting remarks are made especially with reference to burying or implantation of radium needles in malignant growths, a method which promises much in the treatment of cancer of the tongue. The prophylactic use of radium in preventing the recurrence of malignant disease after operation is commended. Cancer of various organs of the body is briefly mentioned. In carcinoma of the breast encouraging facts have been observed, although only inoperable cancers or inoperable recurrences should be treated. In carcinoma of the uterus radium treatment in inoperable cases accomplishes results not to be obtained by any other method. In carcinoma of the bladder, esophagus, rectum and prostate, radium holds out some hope of relief and even of clinical cure in selected cases. Several cases of sarcoma are reported in which the results from radium treatment have been gratifying. Fibroid disease of the uterus may be relieved symptomatically and in some cases an apparent cure of the disease has been brought about. Splenic leukemia is briefly commented upon and the beneficial results from radium treatment are mentioned.

Value of Spinal Puncture in the Etiologic Diagnosis of Cardio-Vascular Diseases. Leon Bloch, Chicago, Ill. The Journal of the American Medical Association, Vol. LXVIII, No. 9, March 3, 1917, p. 691.

Spinal puncture as a means of determining the etiology of cardio-vascular diseases, where other etiologic factors aside from syphilis could be ruled out, was suggested to the writer by obtaining a positive Wassermann reaction in the spinal fluid of a patient with aortic aneurism in whom, in spite of symptoms suggestive of cerebro-spinal syphilis, the blood Wassermann was negative.

In a series consisting of five cases of aortic aneurism, one of abdominal aneurism, four of aortic regurgitation, nine of myocarditis in various stages of decompensation, two of hypertension and one of angina pectoris, seventeen gave positive Wassermann reactions in the spinal fluid. These comprised four cases of aortic and the one of abdominal aneurism, three of aortic regurgitation, eight of myocarditis, and the one case of angina pectoris. Five cases with negative Wassermann reaction in the spinal fluid yielded such findings as lymphocytosis, and the presence of globulin and albumin with or without high pressure.

Attention is called to the fact that there were no cases of double mitral lesion in this series, a condition which is generally accepted to be of inflammatory origin.

The important evidences in the spinal fluid which indicate syphilitic involvement or origin are a positive Wassermann, high cell count with a preponderance of lymphocytes, a positive Nonne and Noguchi, and a spinal fluid under high pressure. The Lange test was not carried out in this series. Tuberculosis can be easily ruled out in the differential diagnosis by the differences in the clinical course.

While a cure of syphilis of the cardio-vascular system is impossible where the condition is of long standing, temporary relief is sometimes obtainable. Hence, there is a justification for the procedure in those cases where the diagnosis is in doubt.

(Continued on page 560)

TROPICAL DISEASES AND PUBLIC HEALTH

ADVANCES IN PUBLIC HEALTH WORK IN LOUISIANA DURING THE PAST YEAR*

By Oscar Dowling, M.D.,
President, Louisiana State Board of Health,
Shreveport, La.

To state clearly and in specific terms the progress made by a state in its health work is not an easy task. Those intimately connected with such activities realize that there is constant advance, but unfortunately, there is no measuring rod for the growth in public sentiment, nor the development of higher standards. In all efforts which have a social aspect, this is true, and betterment of health conditions is closely and intimately related to social ideals and activities.

To present Louisiana's progress as briefly and in as succinct a manner as possible, I have had handed me available records from the Bureau of Vital Statistics, Epidemiology Bureau, Bureau of Sanitary Engineering, Food and Drugs Department, Rural Sanitation, Child Hygiene and Editorial Bureaus. While the figures simply indicate, they are also our only index of the response to our efforts.

In vital statistics, the records are as follows: For nine months of 1915: Births, 11,005; deaths, 7,362, making a total of 18,367. For nine months of 1916: Births, 21,250; deaths, 10,696; making a total of 31,946.

From this you will note an increase of 13,579 births and deaths during 1916 over the same nine months in 1915. Comparison shows an actual gain of 93 % for births and 45.3 % for deaths, or a total of 74 %. In the towns with a population of 2,500 and over, there has been an increase of 47.3 % for 1916. In a large number of parishes, voluntary canvass for unreported births and deaths has been made under the direction of women's clubs or undertaken by public-spirited citizens. The returns from two parishes, owing to the local efforts, have increased 50 %; and in one parish the records have trebled themselves.

The increase in the number of records sent in to the office in the year 1916 is a concrete result of the persistent, systematic and continuous effort of five years. Because of the advance in the work of this Bureau, we have strong hopes of immediate admission into the registration area.

A comparison of the reports of the Epidemiology Bureau is also gratifying. There are twenty-five diseases reportable in Louisiana, four of these for statistical purposes only. During 1915, of our 1,200 physicians outside of New Orleans about 200 returned records on our epidemiology cards. During 1916, there are about four hundred on the list who are now sending in with more or less regularity reports of cases of the reportable diseases which they treat or of which they know. For nine months of 1915, reports of 4,149 cases were received, while for nine months of 1916 4,801 have been received. The records of 1915 include about 1,000 cases of pellagra, and as there has been no such outbreak during 1916, our reports are much in advance of those of last year, more so than at first appears from the figures given.

The records of the Bacteriological Laboratory show an awakening on the part of the public to the value of the examination of specimens and the necessity for use of anti-typhoid vaccine.

The total of ordinary examinations for ten months of 1916 is 10,600.

The State Board of Health furnishes free anti-typhoid vaccine. This has stimulated the physicians to the practice, and

*Read in Section on Public Health, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

many persons have been made immune during the past nine months.

In the Bureau of Sanitary Engineering we are also reaping the reward of efforts of the past years on the subject of water and sewerage. In the year 1916, two cities installed systems of sewerage under the direct supervision of the State Board of Health. Extensions of systems have been made in a number of cities, notably in Shreveport. Bonds have been voted and plans approved in several of the smaller cities. In one city of 10,000 and in a small town during the past week elections have been held and bonds voted for sewerage. A vote will be taken on the sale of bonds in several other places shortly.

We have probably made more progress in the installation of new water plants and filtration plants at places already having water supplies than in any other line of this work. In 1912, a survey was made of almost every community in the State of 500 inhabitants and over, with special attention to the water supply. The State Board of Health has examined, free, samples of water from almost every public supply in the State. In the beginning of 1916, a car with full laboratory equipment and force was put on the road, and in this laboratory and the two in the city, bacteriological and chemical, over 3,000 samples of water have been analyzed since the first of January, 1916. Every public supply found unfit for use was posted. In one city alone, signs were placed on several hundred wells. The educational effect has been of great value, theattention of the public being called to the necessity for pure and wholesome water.

In 1916, we have also evidence that the regulation requiring the approval of the State Board of Health of plans and specifications for jails, school houses, etc., is becoming appreciated and understood. The Bureau of Engineering has passed upon a large number of these plans as well as those for public sanatoria and other community enterprises.

At the beginning of the year, it was planned to make a complete sanitary survey of those cities that expressed a desire to know conditions. Up to the present, a survey has been made of eight cities, the aggregate number of inspections being 17,942. The results have been encouraging, as in almost every one of these sanitary closets and improved systems of garbage and waste disposal have been installed.

Of our own initiative, mosquito surveys to determine the location and prevalence of anopheles' breeding places have been completed in twenty-one cities and towns. In many of these our recommendations have been carried out.

In the Food and Drug Department, the Dairy Division reports show gratifying advance in the building and remodeling of dairy barns and in the raising of milk standards.

The examination of a large number of patent remedies was undertaken in the chemical laboratory, and we have now on record analyses of eighty-eight of these so-called patent preparations. One of the interesting phases of this work was the analyses of 294 samples of aspirin. The examination of a large number of samples of coffee, sausage, adulterated sugars and peppers, have also been a part of the laboratory work during this year.

In rural sanitation we have not had the results hoped for. The effort to extend the work over the entire area of a selected parish was not successful, largely because of conditions over which we had no control, the high water in the early spring and consequent financial depression. However, in one portion of the parish the rural sanitation idea has been thoroughly demonstrated, and there is a hopeful outlook that the movement may be extended.

In the Child Hygiene Bureau, our success is measured by the increasing demand for assistance. We have more calls for the services of our visiting nurses than can be met; also, for help in baby contests and exhibits at parish fairs. The minimum number of school bulletins issued monthly now required is 200,000, an increase over last year of 50,000. There is also an increase in the demand for our *Quarterly Bulletin*, which we consider a hopeful sign.

While our progress is not commensurate with our desire, we have no reason to be other than gratified and encouraged at

the response which the citizens of Louisiana have given in the establishment of better sanitary conditions. There can be no doubt also that the health standards are progressively higher from year to year.

There is nothing so important in health work as the education of the public in the principles of better living and better health, and every activity of the Board is made to subserve this end and this fundamental underlying purpose.

LOCAL HEALTH WORK UNDER STATE BOARD SUPERVISION WITH SPECIAL REFERENCE TO SCHOOL INSPECTION AND TYPHOID FEVER*

By G. M. Cooper, M.D.,
Chief of Bureau Rural Sanitation, North Carolina State Board of Health,
Raleigh, N. C.

I am aware of the fact that there has been in the past much criticism of health officials for discussing their own work. I want to forestall that criticism by stating in the beginning that if a man does not talk about something which he *knows*, he at least can only express an opinion in terms of vague generalities. However, it is with reluctance that I present such a subject, for the reasons just stated.

In this paper it is my purpose to describe how the North Carolina State Board of Health managed to administer three complete doses of anti-typhoid vaccine to one hundred thousand people in twenty-one of the State's one hundred counties from June 21, 1915, to September 17, 1916; and also the history of post-typhoid vaccination six months after taking the treatment, as ascertained from eleven hundred physicians in every county in the State. I want to present, too, some of the findings from an examination during the past year of more than ten thousand school children in the rural districts.

The necessity for some method of standardization of rural public health work has been a recognized problem for a long time. It is not solved yet; and I fear it will be a long time before we see any ideal plan in operation which is practical and workable and free from objections. However, many of the most brilliant minds in the field of American public health activities are seriously at work improving means and methods. Until the old Rockefeller Hookworm Commission a few years ago successfully demonstrated the feasibility of the dispensary in teaching the country people something of disease prevention, nothing concrete had been attempted.

Ninety per cent. of all the literature on rural sanitation today, in the South even, has been written on mahogany desks in New York, Chicago and Boston.

In some states like Massachusetts I believe they have the township health officer; in others, notably New York, the system is being tried which consists of having several counties form a district over which a district director has authority with sub-officers in each county. In North Carolina for the past four years we have been trying the experiment of whole-time county health officers in ten to twelve counties; and at the same time we have been demonstrating the value of a unit system under State Board direction. No matter which plan is ultimately adopted, the county, for the South at least, must be made the unit.

MEDICAL INSPECTION OF SCHOOLS

I shall describe first our plan of school medical inspection. The necessity for some standard form of inspection of school children is recognized by every progressive individual and community everywhere. For thirty years the Japanese have made an annual rigid inspection of every school child. This inspection includes the height, weight, nutritional condition, etc., in addition to our requirements of nose, throat, eyes, etc. A copy of these findings for every child is filed with the Imperial Government at the capitol. Advice is not only given to teachers and parents, but, as the "heathen Jap" lives under a monarchial form of government and is ruled by a Mikado, the said teachers and parents are forced to remedy the child's defects. Is it any wonder that the teeth of Japanese children are as pretty as their cherry blos-

*Read in Section on Public Health, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

soms? This inspection has been made for thirty years. Do you marvel further that the Japanese Army made a record in the war with Russia?

In this "land of the free," where we value our "pussonal" liberty and the privilege of a few of us "to get drunk" or form "Leagues for Medical Freedom" higher than we do the future of our children or the safety of our country, we can as yet only give advice to a limited number of school children's parents.

It is estimated that we have about 18,000,000 men in the United States between the ages of 18 and 40 available for military duty. In Japan the estimate is 14,000,000 men in the same class. From a military standpoint alone we can not afford to let our physical average drop one iota lower than it is.

The medical inspection of school children is simply one of the units of our system of health work which we offer to the counties having no whole-time health officers and no organized standard of health work. We ask the county to make an appropriation direct to the State Board of Health to defray most of the actual cost of the work.

We next arrange an itinerary with the county superintendent of schools. A personal letter is written to each teacher and literature, including an especially prepared health catechism, is sent about two weeks before the inspector's visit. The teacher is urged to give the children especial instruction in this catechism. The teacher is also requested to have as many patrons as possible visit the school on this day, which we term "School Health Day." The pupils are urged to write original compositions on health subjects and cash prizes are awarded to the two best for the county. Cash prizes are also given for the two schools in a county making the best record on Health Day by having the greatest percentage of patrons present, best knowledge of catechism and later for the largest per cent. of defective children reported treated.

This work was first commenced by the Board in November, 1915. Only three counties were worked between that time and March, 1916. One hundred and forty-eight schools were visited and ten thousand one hundred and eight children examined. Of those, two thousand nine hundred and sixty-three were found to be physically defective. A total of two hundred and eighteen lectures were given, one hundred and twenty-two of which were illustrated with lantern slides. Nineteen thousand one hundred and fifty-eight people attended these lectures, more than 40 % of the white population of these three counties.

In one county less than 25 % of the children were found to be vaccinated either against smallpox or typhoid fever. In one of the others about 50 %, and in the third 75 % were vaccinated against both. Notwithstanding the fact that the last mentioned is an eastern county with a Negro population of 60 %, they have a death rate from typhoid fever far below the average for the United States. They have had no smallpox in about three years.

By this method of school work we are endeavoring to teach practical rural sanitation. We are giving specific advice to the parents of children where it is most needed. But above all we are conducting a quiet educational propaganda to get the masses of the people to understand the A. B. C.'s of personal hygiene and also to understand the ideals and purpose of public health endeavors. This year we are planning to do about double the amount of school inspection.

TYPHOID VACCINATION

I was asked by Dr. Leathers and Dr. McBrayer to report this piece of work by the North Carolina State Board of Health, because they believed, as a distinctive achievement, it would be of universal interest. Beginning June 21, 1915, and ending September 17, 1916, working only in the midsummer months, the North Carolina State Board of Health conducted nine hundred and eighty-two free dispensaries, covering every remote township and hamlet in twenty-one counties. One hundred thousand people were given three complete treatments of anti-typhoid vaccine at these dispensaries. One hundred and thirty thousand people attended these places. At every one of these a public health talk was made—not a lecture—but a quiet, plain talk, respectfully heard and understood. More than one hundred thousand pamphlets and leaflets on dis-

ease prevention were placed directly into the hands of the people.

In the summer of 1915 we conducted this work in twelve counties from the mountains to the sea over an extreme area of 400 miles, representing all classes of our State's civic life. These counties had a population in 1910 of slighty more than 400,000. A little less than 13 % of the entire population took the three treatments.

This past summer we worked nine counties having a population of 265,000. A little over 18.5 % of the entire population took the treatment. The per capita cost for this work ranged from 3¾ cents in one county to about 15 cents in another for the three treatments. This, of course, does not include the expense of directing the work by the State Board nor that of the State Laboratory in providing free vaccine. The item of vaccine alone at the lowest possible estimate of the three doses to each individual would have cost the people seventy-five thousand dollars. I want to state here that a campaign of this kind would be impossible without a thoroughly efficient State Laboratory, which we certainly have.

Now, the acid test to be applied to any preventive measure is, does it prevent? It is too early to form any conclusion from our campaign this year; but I have some intensely interesting facts to present concerning the record of our 1915 work. As stated above, this work covered twelve counties. The reports of deaths from typhoid fever in these twelve counties to the State Vital Statistics Department for 1914 numbered one hundred and seventy-five. The number of deaths from typhoid fever in these same counties in 1915 was one hundred and thirty-two, a reduction of forty-three. Notwithstanding the fact that our reporting was not good enough in 1914 to admit us to the United States registration area, in 1915 the reports were up to the standard requirements and we have been admitted.

Only two counties reported a slight increase. In those the campaign was late and in one, Edgecombe, where they had reported fourteen deaths to September 1, 1915, to the same date this year they reported only three. In the other county, Craven, where they had six deaths from typhoid to September 1, 1915, they have only reported one to the same date this year. Analyzing the figures still further, these twelve counties made a total reduction in their typhoid deaths of about 30 % in 1915 over 1914. Taking the reports to September 1, 1916, as recent as we could get them, and allowing for all delayed reports, the reduction reported to the same date this year over last year shows a still further decrease of about 30 %.

As additional proof, if any were necessary, that this decrease is due directly to the campaign waged, is the fact that in every adjoining county to any of the above, except where they have whole-time health officers or have had other organized efforts, the rate for the year 1915 showed *an increase* over the previous year.

As there are absolutely no authentic figures from civil life concerning the value of vaccination as a protective measure against typhoid; and believing that we have an excellent opportunity to present a great deal of valuable evidence, the North Carolina State Board of Health has gone to considerable expense and a vast amount of trouble to get at the truth first hand.

Six months after the close of our first campaign in 1915 we sent out a return postal card to every regular active physician in North Carolina whose address we could obtain. On that card we asked the following question:

> How many cases of typhoid fever in persons who had been vaccinated against typhoid fever did you treat during the year 1915?
> Name . . . . . , M.D.
> Address.....

Now comes the most remarkable statement in this paper when you consider that it is impossible to get seven out of ten practicing physicians to reply to a letter of any description. From a total of some fifteen hundred cards sent out, we received replies from one thousand and ninety-nine. Of this number received from physicians in every section of the State, nine hundred and seventy-four replied in the negative without qualification. Twenty-five did not understand the question, said they did not remember or in other ways dodged the issue. One hundred replied in the affirmative.

Following are a few of the comments from those physicians replying in the negative, which are representative of the great mass of replies:

"I have not heard of a case."

"We seldom have a case of typhoid fever in this section now."

"I have vaccinated 400 against typhoid in the last four years, not one of whom has had fever."

"Not one. And, too, may your
Hook worm patients grow so strong
That life shall be a merry song."

"Nearly everybody in this section has taken the treatment. I have not heard of a case. Before this year I always treated several cases."

"Treated none that have been vaccinated. Vaccination is O. K."

"In several families where typhoid existed and vaccine was used no other cases appeared."

"None. Fifteen cases treated who had not been vaccinated."

"Very few cases of typhoid fever in this section, due to good effects from vaccination."

"None. Six cases in those who had not been vaccinated."

"None that had taken three treatments."

"None. Eight cases who had not been vaccinated."

"Not one. I consider the protection ample."

"None. It seems to have about disappeared."

This from a whole-time health officer who was among the first to give the vaccine free:

"None occurred in this county among those vaccinated."

This from a prominent physician concerning his daughter:

"None. But the most typical case I have treated in years was my young daughter, who had not been vaccinated, but who was nursed through the entire illness by my other daughter, who *had been vaccinated* and who did *not* have the disease."

"Treated about half the number of cases treated previous to the anti-typhoid campaign, but always found the patient had not taken the preventive treatment."

"I have been practicing medicine for 30 years, and 1915 was the first year I did not treat a case of typhoid fever—due, I believe, to vaccination."

"I had one family of 8 exposed. Only 3 would submit to vaccination—they escaped; the other 5 had typhoid."

"In families with one case and all others taking vaccine just following it, none of them developed fever."

Here is an unintentional compliment to somebody:

"Did not treat a case last year. It has been dying out for the last six years from some cause."

"One case; vaccination after infection. Five other members of the family vaccinated and escaped. Two additional members refused vaccination and both had fever."

"Had 30 cases in unvaccinated persons in one neighborhood; but vaccinated 80 exposed people and the epidemic spread no further."

To the one hundred physicians who reported cases we sent the following questionnaire:

POST-VACCINATION TYPHOID FEVER

Person's name ..... Address .....
Sex ..... Age .....
Date of third injection .....
Ever had typhoid fever before? .....
Number of hypodermic injections of vaccine taken .....
Interval between 1st and 2d injection .....
Bewteen 2d and 3d? .....
Character of general reactions .....
After 1st injection .....
After 2d injection .....
After 3d injection .....
Period of time after 3d injection until appearance of first symptoms of typhoid fever .....
Manufacturer of vaccine .....
Retailer of vaccine .....
Is there any question as to the quality of the vaccine? .....
Could vaccine have been too old? .....
Have been kept too long off ice? .....
Was there any question as to diagnosis? .....
Could the disease have been one of the paratyphoids? .....
Could the disease have been a "flur up" in a latent tuberculosis? .....
What was the type of the disease with reference to severity? .....
What was the termination? .....
Signature ....., M.D.
Address .....

P. S.—If you can not supply above information please give us address of party who can.

Thirty-four filled out and returned the blanks. Here is a summary of some of the replies:

"Not a well-defined case, probably para-typhoid."

This from a prominent Charlotte physician:

"I have seen only one case of typhoid following vaccination and this was 8 months after using the sensitized vaccine, which does not appeal to me on theoretical grounds."

Two of these physicians wrote that they misunderstood the question on the card, and had treated none who had been vaccinated.

One mild case which had been vaccinated 14 months previously and which "overeat" at a corn husking, suffered a perforation and died.

Three reported severe cases with death ensuing.

Of the three last, one developed the disease two days after the third treatment with vaccine from the State Laboratory. The remaining two physicians were unable to ascertain what vaccine was used, who gave it, or where administered further than "some time in 1914."

Nine reported severe cases with complete recovery. One of these was 30 months after administration of vaccine whose manufacturer was unknown.

Five reported vaccine used as Mulford's and the time between the last injection and the first symptom of fever ranged from two months in one to two years in another. Two cases developed after 9 months and 19 months, respectively, the attending physician being unable to learn whose vaccine was used.

One case developed 12½ months after having been given the State Laboratory vaccine.

Thirteen of the thirty-four expressed a belief in the possibility of para-typhoid or tuberculosis' complicating the diagnosis. One physician writes: "I must acknowledge I suspect tuberculosis now. I did not at that time."

SUMMARY

1. When a county contains a city of more than 10,000 people, there should be a thoroughly organized health department with a graduate physician who has had experience in public health work at the head. There should be at least four school and public health nurses, a food inspector and a second physician to look after medical cases.

2. Where the above resources do not exist and especially in small, poor counties, certain units of health work can best be done under the state board supervision. This is true of the following units: school inspection; typhoid vaccination, including all soil pollution control; and quarantine of contagious diseases. This arrangement makes for low per capita cost, effective work and efficiency and removes health work from the field of petty politics.

3. With increasing demand on the part of the public for medical inspection of school children, no time should be lost in devising a standard for this class of work. A free dental and medical dispensary with the county as a unit ought to be provided for. The free dental clinics in the city of Detroit cost $30,000 a year. The country children of the South need this service as badly or worse than the city dwellers of the North.*

4. An analysis of reports from one thousand and ninety-nine practicing physicians in a state where the State itself had administered anti-typhoid vaccine to 100,000 people and only four deaths are reported following the three treatments proves conclusively: that if three complete treatments of a fresh, properly-prepared and properly-preserved vaccine are given in maximum doses at least every two years, the protection is equal to that given by smallpox vaccine against that disease.

5. Any method that gets one hundred and thirty thousand people out of a population of six hundred and seventy thousand to quit their work and pleasure to go miles to attend a public health dispensary, one hundred thousand of them three times, is worthy of serious consideration. These one hundred and thirty thousand people may be depended upon to regard public health measures in an entirely new light.

6. When twenty-one counties during a period of sixteen months appropriate direct to the State Board of Health a sum exceeding twelve thousand dollars to supplement the funds of the Board we think that the proof of the pudding is even better than chewing the bag. A dollar from a county will do just as much as a dollar from the General Assembly, provided it is expended with the same scrupulous care.

DISCUSSION

Dr. Paul B. Johnson, Washington, D. C.—I had the very great pleasure and privilege of riding one day with the efficient county health officer of Burke County, North Carolina, as he was giving anti-typhoid vaccine to the country people in the several parts of that county. We were out about ten hours from Morgantown. We drove a great many miles over the country. The doctor vaccinated 469 people that day, and

*The North Carolina Legislature in March, 1917, provided for state aid in treating defective school children—dental and medical.

I was amazed to think the country people would come from their work and undergo such a strange sort of treatment. They were the hill people. Many of them, the doctor told me, had never been in town or else very seldom went into town. They were the ordinary hill country people of North Carolina, and it spoke well not only for the efficiency of the State Health Department, but for its very remarkable advertising campaign. These people met at six different specified places, and at one place 151 took the treatment. The places specified had been advertised on placards in different parts of the County. The people came without hesitation and marched up to the doctor without any squeamishness, and most of them were perfectly calm about it.

Dr. A. G. Fort, Tifton, Ga.—I would like to ask Dr. Cooper the type of vaccine used by the North Carolina State Board of Health. Was it a straight vaccine or a mixed vaccine with para-typhoid A and B?

In the State of Georgia we have carried on a campaign something similar to that which has been employed in North Carolina, but our campaign was carried on under the direction of the District Commissioner of Health. Unfortunately we have no vital statistics in this State. We have a law, but no statistics. We are unable to tell the difference between the amount of typhoid fever this year and that of last year. But in Tift County we had reports from a physician whose home is in Tift County in a small community of 300. He reported 39 cases of typhoid fever during the months of July and August. We visited the physician to ascertain where these cases were, as we wanted to find out something about them. He checked up his list, one name after another. We asked him where this person and that person lived. We found that 38 of 39 lived in an area where there had been no vaccination, and the one in Tift County which we thought had been vaccinated had never received the treatment. We chose a mixed vaccine instead of straight typhoid because we knew that in the type of public health work we were doing, if we had a case of slow fever or para-typhoid A or B, nine out of ten physicians would report it as typhoid fever, and the laity would act upon it as such, and our work would come into disrepute. As I have said, we used mixed vaccine and were able to vaccinate 3,251 ourselves, and with the physicians we vaccinated 5,000 out of a population of 30,000, and did this within three months, from June to September, 1916.

Dr. Clarence A. Shore, Raleigh, N. C.—I can answer the question as to the type of vaccine used: it is the straight, unmixed typhoid vaccine such as is used in the United States Army. We use the same strain of organisms and employ the same technic as that of the Army. There are several reasons for this: (1) the remarkable success of its use in the Army, which is proved by very complete and authentic records; and (2) there is very little para-typhoid in North Carolina and with probably no mortality. In our opinion general immunization against para-typhoid infection is not advisable. On the other hand, liability to typhoid is almost universal and a general immunization is of the greatest importance. The State Laboratory of Hygiene makes the typhoid vaccine for free distribution. Over 400,000 doses were used in 1915, about half by Dr. Cooper's department and half by the practicing physicians throughout the State.

Dr. W. S. Leathers, University, Miss.—I have given some consideration to the matter of typhoid vaccination as a public health measure, and I confess that my mind is not clear as to whether the wholesale vaccination of the people is an economic proposition. As I understand it, vaccination against typhoid lasts only about three years, and for this reason the question arises whether it is desirable to use a preventive measure of this kind when it becomes necessary to repeat it every three years. I can understand that it may have a stimulating effect from an educational standpoint, but unless the people are told frankly that it is only a temporary expedient it may have a reactionary effect. Of course, it is absolutely all right where there is an epidemic of typhoid, or whether there may be danger and protection is desired for a certain length of time. I should like for Dr. Cooper to touch upon this phase of the question more fully.

Dr. G. M. Cooper (closing).—If vaccination should fail it gives us a chance to preach public health and sanitation to the people who need it most. The protective value of vaccination is a point we have considered seriously, time and again, in carrying on these campaigns. Here is what I mean when I say I think it pays. We can put a pamphlet on hookworm disease, including soil pollution, the sanitary type of privy, and things of that kind, into the hands of the people when they come to be vaccinated.

Another thing is it allays the fears of that class of people whom we need most to reach against anything pertaining to protective measures. In that way I think it pays.

The fact that we have reduced the death rate from typhoid fever in as many as 12 counties over an area of 400 miles, representing every class of people in the State of North Carolina, from mountaineers to fishermen, shows it to be protective and to be productive of good results.

There are one or two points I would like to bring out further, one of which was made by Dr. Johnson regarding Burke County. I did not include Burke County in my estimate at all. We have no record of the cases of that county. The County Physician acted upon his own responsibility and did not make a report to us. Therefore, to get at the protective measures or value of them, as Dr. Fort and Dr. Jones say, we must have a record of the cases that are treated. One thing is to get the right sort of vaccines, and I would like to say right here that the sole protective value must depend upon the vaccine used. I would like to give Dr. C. A. Shore credit for the reduction in the typhoid fever rate in these counties because we could depend upon the vaccine he put out; and he and other members of his Laboratory were under a tremendous strain. During the month of August they sent out 152,000 c. c. Of this amount the State Board of Health used 77,000 and the remaining 75,000 was scattered promiscuously.

Since we have had whole-time health officers typhoid has been reduced practically to a minimum in some of those counties. And in this connection I might mention the work of Dr. Sevier and others. They have made their reports to us, but they have good records. When a case is reported to us at Raleigh, we turn to our records and find the name of the doctor, and the age, sex, and so forth, of the patient vaccinated. We have them sign a statement giving names of people vaccinated, which is filed in our office to protect us. We make it plain to the people that we do not consider vaccination protective at all unless they have taken three doses at proper intervals apart.

I want to say to Dr. Leathers that the great value of this work is in the spread of public health education among the people. If it were not for that fact, I would not recommend vaccination *per se*, because it would be impossible to get them out at a low per capita cost.

AUTHORS' ABSTRACTS

Tropical Diseases and Public Health

A Program of Public Health for Cities. W. C. Rucker, Washington, D. C. American Journal of Public Health, Vol. VII., No. 3, March, 1917, p. 225.

The author assumes that every other reason for which mankind collects itself into more or less permanent aggregations is subsidiary to the basic idea of community protection and betterment of every sort, and that every action which produces a betterment of the conditions under which the community lives and works is followed by a definite reaction in increased health. In order that mankind may dwell in a concentration in excess of the biological limit, it is necessary that artificial safeguards be thrown about him. The most important of these safeguards are those exercised by the community machinery as a whole.

A plea is made for the co-ordination of the health department with all of the other departments of city government, to the end that the health department may cease to operate in end results and seek to prevent disease rather than to eradicate it after it has occurred. "Under the present system," says the author, "it would be more logical to call the health department the disease department." The heart of the program of public health for cities lies in the central co-operative focus. This comprehends both the office and the man. The office must be removed from politics and must be filled by a many-sided man who is able to view health with a broad-angle vision, realizing that his duties are not only to keep an entire municipality from being sick, but what is of infinitely greater importance, to keep the body politic in a condition in which its functionation is at the highest degree of physiological efficiency.

AUTHORS' ABSTRACTS

Medicine

(Continued from page 551)

Interpretation of Mineral Water Analysis. R. H. Hunt, Bartlett Springs, Cal. Pacific Medical Journal, Vol. LX., No. 2, February, 1917, p. 81.

This paper is a plea for more uniformity in the expression of mineral water analyses and shows the advantages of the ionic form expressed in parts per million. When this method is adopted the comparison of mineral waters from their analyses will be simple. The old custom of reporting mineral water analysis in terms of salts is now obsolete. Salts in solution are more or less completely dissociated into their ions and only exceptionally can the form into which ions might combine be accurately foretold.

The hypothetical combination of salts is made by a rule and, as is shown in a comparative table, there are several rules, all giving a different result with the same water. Stabler has demonstrated mathematically—by the reaction coefficient—that the analytical results can be interpreted far more satisfactorily from the reacting values than from their hypothetical combinations.

A hope is expressed that the layity and the physicians will discontinue to demand the hypothetical combinations of salts and will acquaint themselves with the better and more scientific method—the ionic form expressed in parts per million.

Treatment of Acute and Chronic Articular Rheumatism with Radioactive Magnesium Sulphate Solution. Ernest Zueblin, Cincinnati, Ohio. Maryland Medical Journal, January, 1917, p. 1.

Report of 9 cases in which high doses of salicylates given over a considerable length of time was a failure. In all the cases observed one or several joints were considerably involved, there was marked swelling, tenderness, thickened capsule, with increased synovial fluid, marked functional impairment or total inability for walking. The treatment—external without any salycilate or internal medication in some of the cases—consisted exclusively in the application of compresses—Priesnitz pack—saturated with radioactive magnesium sulfate solution, repeated every three-quarter hours. The plain magnesium sulphate before used is treated by a special method and as tests have proven becomes radioactive. The result of treatment in all the instances was rapid regress of the symptoms mentioned above, even in 21 hours, quick recovery compared with the slow improvement obtainable with the customary methods of treatment. For more details of the clinical study I have to refer to the original paper. The results with this treatment are at least very encouraging as to the immediate and ultimate results of the cases. The use of the method mentioned should be thought of in all obstinate cases of arthritis, particularly where the customary methods of treatment are not satisfactory and where direct application of radium or mesothorium are not within reach.

SURGERY, GYNECOLOGY, OBSTETRICS AND GENITO-URINARY DISEASES

DIAPHRAGMATIC HERNIA*

By James F. Mitchell, M.D.,
Washington, D. C.

The term diaphragmatic hernia has been loosely used to include three quite different conditions,—namely, eventration of the diaphragm, and true and false diaphragmatic hernia.

Eventration of the diaphragm is in no sense a hernia and will not be considered.

Diaphragmatic hernia in its broad sense is not an extremely uncommon affair, Giffin, in 1912, having collected 650 cases, and current literature containing many more. If the presence of a peritoneal sac is considered essential to a hernia, the actual number is extremely small; for at least 90 % have no peritoneal covering and consist merely of a protrusion of abdominal organs through a normal or artificial opening in the diaphragm. The stomach is most often the herniated organ, while the colon, small intestine and omentum follow in order of frequency. The spleen, kidney, liver, pancreas and other organs have been found. One interesting case is reported in which the appendix lying high in the left chest beneath the clavicle was the seat of recurrent attacks of acute appendicitis.

The condition may be either congenital or acquired. The diaphragm, consisting for the most part of muscle, with its central tendon stretches as a septum between the thorax and abdomen, and is perforated by numerous openings for the passage of the esophagus, aorta, the vena cava, and smaller vessels and nerves. It develops from an anterior and posterior portion and when they unite there are often left small gaps in the muscle closed only by peritoneum and pleura. Two of these are fairly constant on each side, one in front between the sternal and costal portions, known as the foramen of Morgagni, and one posteriorly between the lumbar and costal portions, known as the foramen of Bochdaleki. No hernias have been reported through the posterior foramen, but it is quite likely that the foramen of Morgagni serves frequently as a point for the development of a congenital hernia. Aside from these the hernia may occur through enlargement of any of the normal openings, especially that for the esophagus. Traumatic hernias result usually from stab or gunshot wounds or from rupture of the diaphragm due to a fall or crush. McGuire reports a case caused by a fall seven months before the patient came to operation. There was a tear in the diaphragm five inches long, the entire stomach being found in the left pleural cavity. The great majority of hernias, 92 %, occur on the left side, the liver serving as a protection on the right. This is especially true of the traumatic ones, for stab and gunshot injuries are most often left-sided. While the abdominal organs are usually found in the left chest displacing the heart to the right, on the other hand the opening may be through the left side of the diaphragm and the hernial contents pass over and occupy the right chest. Traumatic hernias are for the most part false hernias in the sense that they have no peritoneal sac. The prolapse may result immediately at the time of the injury or may develop gradually and increase in size, the negative pressure in the thoracic cavity assisting in its development. The hernia may exist for a long time without giving any symptoms and strangulation be the first symptom to demand treatment. This may be months or years after the accident.

DIAGNOSIS

Diagnosis depends upon the history and physical examination. The majority of cases have been discovered only at autopsy. Many give no symptoms during life. Giffin states that in 650 cases the diagnosis was probably correctly made during life in only fifteen. Waelli, in 1912, stated that Struppler collected 13 cases in which the diagnosis was made, and Lacher in 270 found only 7 which had

*Read in Section on Surgery, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

been recognized during life. The congenital variety is especially apt to escape notice until strangulation occurs. In recent traumatic cases the presence of a wound in the region of the diaphragm should always suggest the possibility of diaphragmatic hernia. It must be remembered that in many of these cases there may be no immediate symptoms. Later there is a history of upper abdominal and thoracic pains, dyspnea, and vomiting. Examination of the chest may show displacement of the heart and changes in the respiratory excursion of the affected side. The heart is displaced most often to the right. The differential diagnosis must be made from pneumothorax, pleurisy, tumors of the diaphragm, and eventration of the diaphragm. In some instances the picture is one of intestinal obstruction. In others it may closely simulate gastric ulcer. X-ray examination is of special value, particularly in congenital or non-strangulated cases, where the signs and symptoms are not definite. In many instances the hernia is discovered on the operating table when the chest is explored for a recent wound or when the abdomen has been opened for the relief of intestinal obstruction or supposed disease of the stomach.

TREATMENT

There is no palliative treatment. As a prophylactic measure every recognized injury of the diaphragm should be carefully repaired, for a weak spot while causing no immediate trouble may serve as a predisposing factor in the formation of a hernia later on. Congenital or traumatic hernias may exist for many years without trouble, but sooner or later there arise symptoms of obstruction or inflammation which demand surgical intervention. There are two routes of approach—the thoracic and the abdominal. Each has its particular advantages, and in some cases the two must be combined. It is claimed by advocates of the thoracic route that adhesions can be more easily separated and the diaphragm more readily sutured through the pleural cavity. In acute injuries the abdominal route offers the advantage of better inspection and safer repair of wounds of the abdominal viscera. It also avoids the risk of opening the pleural cavity. Recent experience has proved that suture of the diaphragm through the abdomen is not so difficult as has been claimed. Successful operative technique has been developed largely in the last few years.

The thoracic route is indicated in recent stab wounds which have penetrated the chest, and the nature of the incision depends largely upon the wound. Simple enlargement of the wound with resection of a rib or two may be all that is necessary to enable the operator to replace the herniated abdominal organs and repair the injured diaphragm. Davis, in 1914, reports four successful cases treated in this way. The wound may thus be converted into the Cranwell "trap-door" incision, the flap having its base upward. When the operation is undertaken for a diagnosed hernia which has existed for some time, the flap may be carefully planned. Usually division of two ribs and the reflection of a flap of the entire thickness of the chest wall having its base upward will give sufficient access. McGuire, in 1914, reported two successful cases treated in this way by the transpleural method. Both were traumatic hernias, one resulting from a fall, the other from a stab wound,—both diagnosed before operation.

The six successful cases of Davis and McGuire illustrate the value of the transpleural method of approach, and both authors are enthusiastic in their praise of the procedure, which is also strongly recommended by Cranwell.

The abdominal route may be used in combination with the transpleural method in order to obtain more satisfactory inspection of the abdominal organs, which may have been injured at the time the hernia was produced. It has also been frequently used where diaphragmatic hernias were operated upon under mistaken diagnosis, and it is probably for this reason that the mortality has been so high by the abdominal method. Scudder, in 1912, reports a case in which the diagnosis was made previous to operation and the hernia successfully repaired through the abdomen. Duval (1914) reports a case in a boy of 12, in whom operation was started by the abdominal method and extended to the pleura by resecting the eighth rib. Almost the whole of the small intestine, cecum and transverse colon were found in the thoracic cavity fixed by adhesions. The boy had had two attacks accompanied

by fever and vomiting and at operation the appendix was found greatly enlarged and surrounded by adhesions, the results of numerous attacks of appendicitis. The appendix was removed and the intestines replaced in the abdomen. The opening in the diaphragm was sutured. The child died the next morning,—an undoubtedly unique case of sub-clavicular appendicitis in diaphragmatic hernia. This case illustrates the limitations of the abdominal method, for the separation of adhesions and the reduction of adherent organs would be impossible without an opening in the pleura. Balfour, in 1916, describes a successful operation for the cure of a traumatic, non-strangulated diaphragmatic hernia by the abdominal route. He recommends the Bevan incision adapted to the left side of the abdomen, as for splenectomy.

The following case, occurring in our own service, is another illustration of the successful repair of a diaphragmatic hernia by the abdominal route and has many interesting features:

CASE REPORT

The patient, Mrs. B., aged 52 years, was seen in consultation March 29, 1916, for a supposed gastric ulcer. She stated she had always been well and strong until three and a half years ago, when she began to have attacks of vomiting accompanied by pain on the left side, referred to the heart and radiating into the back. These attacks on some occasions had lasted several weeks and there were periods in which she was quite well. She had been treated by numerous physicians under the diagnosis of gastric ulcer. There was no history of injury. At the time of the examination she presented the picture of high intestinal obstruction,vomiting without effort a quart of bile-stained material. No X-ray examination had ever been made, and during her various illnesses no abnormality had ever been noticed in her chest. An exploratory operation was advised.

A right-sided paramedian incision was made. On opening the abdomen a most striking condition presented itself. No omentum nor transverse colon was visible, but one came directly upon jejunum well up in the epigastrium. It was thus evident that one was behind the transverse mesocolon and the explanation was sought. On exploring the upper abdomen neither stomach nor transverse colon could be seen. On the right the ascending colon was seen passing up over the edge of the liver running toward the left side. The colon was gently drawn upon and gradually there was delivered a much-dilated transverse colon, a long mesentery, and abundant omentum. Following this came a large and greatly elongated stomach. It was found that these organs all came from an opening in the diaphragm situated on the left side close to the anterior thoracic wall. The opening was lined with peritoneum. The posterior edge of the opening seemed to be the normal thickness of the diaphragm, but anteriorly there was little diaphragmatic tissue left. The opening measured about 15 cm. transversely by 10 antero-posteriorly, and was irregularly oval in shape. On introducing one's hand and arm through the opening, they passed not into the left chest, but into the right. The diphragmatic arch over the liver could be felt plainly and the lung was crowded up into the upper and median portion of the chest, the hand passing nearly to the clavicle. No difficulty was encountered in delivering the abdominal organs from the chest, nor was there any tendency for them to return. No attempt was made to deliver the peritoneal sac, which lined the whole cavity in the chest. The opening in the diaphragm was closed by a continuous locking stitch of chromic catgut, the stitches including the diaphragm and the peritoneal lining of the opening. The diaphragmatic tissue being so scant anteriorly, it seemed wise to reinforce in some way the line of suture. This was done by carrying several mattress sutures of linen through the chest wall and tying them on the outside beneath the reflected skin flap. These linen sutures thus reinforced the diaphragmatic suture line and anchored it to the anterior wall of the chest The stomach and duodenum showed no sign of ulcer. The gall bladder was healthy. The appendix was adherent, and was removed. The stomach and transverse colon were placed in their proper positions and the wound closed in layers with catgut reinforced by through-and-through stay sutures of silkworm gut. The anesthetic used was nitrous oxid and oxygen supplemented by a little ether. The patient's respiration was embarrassed in the early stages of the operation, but after delivery of the abdominal organs from the chest there was no further trouble.

She had no nausea nor vomiting after the operation and made an excellent recovery. X-ray photograph taken six weeks after the operation showed the stomach in normal position, the outline of the diaphragm natural, and the lung fully expanded. Examination of the chest shows normal breath sounds throughout the right side.

This case has many striking features. It was undoubtedlyy a congenital diaphragmatic hernia with a complete peritoneal sac, which, however, showed no symptoms during those years, and then presented apparently a picture of stomach trouble diagnosed as gastric ulcer, culminating eventually in symptoms of obstruction which brought her to the hospital. It seems strange that in her numerous attacks in various parts of the world nothing abnormal had been made out in the chest. Unfortunately no X-ray examination had ever been made. Another interesting point was the fact that while the opening in the diaphragm was on the left side, cor-

responding to the foramen of Morgagni, the hernia passed over into the right chest. As in the case of Balfour the lung rapidly resumed its normal function.

Kakels and Basch report a somewhat similar case in a male aged 54. The hernia was undoubtedly congenital and had a true peritoneal sac. The symptoms, however, did not begin until the age of 52. They consisted of pain and abdominal distention, and later on vomiting, and loss of weight and strength. Laparotomy was done and the stomach and omentum found in the thoracic cavity. The stomach could be withdrawn into the abdomen, but tended to go back into the thorax on being released. No radical cure was attempted. The patient died in 36 hours.

The incision which has been most often used has been the median or para-median, because these operations have been for the most part undertaken as exploratory affairs or under mistaken diagnoses. The Bevan incision as recommended by Balfour offers special advantages in giving good exposure without interfering with the nerve supply. If the median incision is used and further exposure is desired, it may be supplemented by a transverse incision dividing the rectus muscle.

Intra-tracheal anesthesia is undoubtedly the method of choice where proper apparatus is at hand. In operating by the transpleural route this has special advantages, and Scudder states that in his operation through the abdomen intratracheal anesthesia was of great assistance in expanding the lung and relaxing the diaphragm during its suture. In our own case, gas and oxygen supplemented by ether by the open drop method were found quite satisfactory and no difficulty was encountered in placing the sutures in the diaphragm.

Chromic catgut has been almost invariably used in suturing the diaphragmatic opening. This may be supplemented by tension sutures of linen. Where the opening in the diaphragm is situated close to the anterior chest wall and diaphragmatic tissue is especially scant at the anterior margin of the opening, the method which we devised during operation of supporting the suture line by passing mattress stitches of linen through the thickness of the chest wall and tying them on the outside would seem to offer an added security.

In congenital cases where a peritoneal sac is present, this may be left undisturbed. In our own case, where the sac was very large and extended as high as the right clavicle, no effort was made to disturb it. X-ray photographs taken a few weeks after the operation showed the lung fully expanded, the contour of the chest normal, and no traces of the sac to be made out.

The results of recent operations for diaphragmatic hernia would show that older statements do not hold good at the present time, and present results can not be based upon past statistics. Scudder, in 1912, stated that 53 operations had been done for diaphragmatic hernia. In 11 cases the operation was through the thorax; 7 recovered and 4 died. In 42 the operation was through the abdomen; 7 recovered and 35 died. He adds that diagnosis was made before operation in only 6 of the cases. This would give 14 recoveries and 39 deaths in 53 operations, a mortality of 73.6 %. On the other hand, taking the more recent cases we find 10 recoveries in 11 operations. Taking into consideration an actual fact that successful cases are more apt to be reported than failures, nevertheless it is quite evident that the operation under present methods offers an excellent chance of success.

DISCUSSION

Dr. J. D. S. Davis, Birmingham, Ala.—I reported five cases of diaphragmatic hernia before the Southern Surgical and Gynecological Association at the Asheville meeting, in 1915, consisting of four recoveries and one death. I now want to refer to two other cases which I have since had. One was operated upon by Dr. Geo. A. Hogan, of Birmingham. Both were stab wounds with omentum protruding through the chest wound. In one case a very small opening was made in the diaphragm, but on exploring the upper abdomen an incision one inch long was found in the stomach.

In all cases of diaphragmatic opening made in transthoracic injury the upper abdomen should be explored. No one can say with certainty that the abdominal viscera has escaped injury. The abdominal incision adds but little to the operative risk and is a great safeguard against overlooking injury to the abdominal viscera as Dr. Mitchell has suggested.

ACUTE APPENDICITIS WITH PERITONITIS: CASES THAT SHOULD NOT BE DRAINED*

By John Wesley Long, M.D.,
Greensboro, N. C.

In discussing appendicitis and peritonitis those cases due to tubercle bacilli may be excluded since it is well understood that they do better without being drained.

At the outset it should be stated that the majority of cases of appendicitis with peritonitis should be drained, since otherwise the sepsis will overwhelm the resistance of the peritoneum and the patient be doomed. This fact looms up so large and the practice is so well established that it has become the custom of most surgeons to drain every acute case.

For drainage we have a good precedent in the natural history of certain cases that are relieved by rupture of the appendicular abscess into the bowel. Indeed, this is the ideal termination and could Nature be depended upon to act so wisely in every instance it would perhaps be better never to operate upon cases of this type.

While drainage is the accepted method of dealing with these cases, thoughtful men are beginning to ask whether or not it is always necessary. Nor is this a new doctrine. Morris and others have for years closed the abdomen where others would drain.

Let us study briefly the situation. We have an acute appendicitis, even gangrenous, with diffuse peritonitis developing. The peritoneum is the structure that is most concerned. It offers the greatest resistance to infection both defensively and offensively. It is an instance of genuine "medical preparedness." No sooner does infection invade the appendix than the peritoneum pours forth an abundant fluid which in appearance varies from a light straw-colored serum to the consistency of cream. It is not unusual on opening the abdomen for the peritoneal fluid to slop out through the incision. Its presence deeper in the pelvis is easily demonstrated by slipping a glass catheter over the brim into the cul-de-sac. Place the forefinger over the end of the catheter and withdraw it. If the pelvis contains fluid the catheter reveals its presence and amount. Catheterization of the pelvis is an invaluable diagnostic measure.

The effusion in the early stages of peritonitis from appendicitis is sterile as a rule. The writer has demonstrated this fact many times. Cultures are made from the fluid in every instance. The characteristic peritoneal fluid found in these cases might consistently be called "pus minus infection." The infection developing in the appendix has not yet reached the effusion. But the effusion is lying-in-wait for the infection. Its chief mission is one of antagonism to the infection. It is loaded with anti-bodies and devouring leucocytes. In other words, it is surcharged with agents destructive to pathogenic organisms. It devours myriads of them, acts as an antitoxin to the toxins, attenuates what it can not destroy and allows the system to absorb the remainder more slowly, thus safeguarding the patient. The beneficial effects of the effusion are in evidence in every case whether we drain or do not. Experience proves the theory that its efficiency is at its maximum when the focus of infection, the appendix, has been removed, and the peritoneum is thereby not encumbered by the presence of a foreign body.

Reasoning by analogy the accepted management of acute gonorrheal infection is *apropos* of this question. No sane surgeon would think of operating upon a patient suffering with an acute gonorrheal infection of the pelvic organs. Why? For the reason that we have learned the evil consequences of so doing. The method advocated by Alonzo Clarke thirty years ago of keeping the patient quiet and giving her plenty of opium gives far better results. The peritoneum pours forth an abundant serum which seals the fimbriated ends of the tubes, hedges about the infected area and neutralizes the elaborated toxins. If time enough be given, the gonorrheal pus is rendered absolutely sterile so that at operation it may be spilled all over the intestines without the slightest danger of producing peritonitis.

While there are many points of dissimilarity between gonorrheal infection of the pelvic organs and peritonitis due to

*Read in Section on Surgery, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

infection of the appendix, the same forces of resistance on the part of the peritoneum are called into play.

It might pertinently be asked what becomes of the peritoneal fluid if it be not drained away. The peritoneum which creates the effusion is able to take care of it. When it has accomplished its mission it is slowly taken into the circulation by the absorbents. If, when the protective fluid is drained away, the peritoneum could not quickly produce more, the patient would be in a worse fix than an automobile without gasoline. To rob the patient of an ally so beneficial, so resourceful, is to put him *hors de combat*.

The writer, reasoning along the lines indicated, has closed the abdomen in 39 cases of the kind described with the most gratifying results in every instance save two, both of which were improperly selected cases.

It must be admitted that the indications for omitting drainage are not as yet clearly defined. That there is a definite class of cases that do better without drainage can not be gainsaid. The writer is governed largely by the general *morale* of the patient. A very sick patient would suggest the advisability of draining. A gangrenous appendix is not considered *per se* sufficient reason for draining. A very fat patient would determine one to drain in a questionable case. Thrombosis of the appendiceal group of vessels is always a positive indication for drainage. A large quantity of fluid favors omitting drainage. The character and odor of the peritoneal effusion are determining factors.

Drains of any kind and under any circumstances are abhorrent to the peritoneum, for they are foreign bodies. Unless the drain be removed within forty-eight hours the tract generally becomes infected. The same would be true if a drain were placed in an absolutely healthy abdomen.

Every one knows that drains inevitably induce adhesions. Adhesions are ever a menace. To cause unnecessary adhesions is inexcusable.

While post-operative hernia is no longer the bugbear it once was, its occurrence calls for explanation on the part of the surgeon, embarrassing caution and a certain amount of invalidism on the part of the patient. Drains favor the development of hernia.

A superficial drain above the fascia when there is a chance of wound infection is permissable since it does not favor hernia.

The perfectly smooth convalescence of patients who have not been drained is an unanswerable argument.

Abstracts of the cases herein reported would make this paper too long. They will be embodied in a subsequent communication.

DISCUSSION

Dr. Floyd W. McRae, Atlanta, Ga.—I do not know of any question that is harder to decide at the operating table than the question of drainage. I do not know any question that is more important to the individual than that the surgeon make the correct decision as to drainage.

I wish to emphasize as emphatically as I am able what Dr. Long says with reference to gonorrheal infection, and the interference therewith by radical surgeons who operate in the midst of acute gonorrheal infection. It is a crime against surgery and a greater crime against the individual operated upon.

I do not know how to tell anybody which case to delay and which case not to delay. Frequently while operating I try to decide all the way through whether I shall drain or not. I am very much inclined not to drain these cases as long as the peritoneum around the appendix, for instance, has not become gangrenous and spotted with fluid, even though it be apparently puslined and it has no odor; but when there is a distinct odor and a dirty dish-water color, the type, if left alone, goes on to a septic peritonitis. Those cases I am inclined to drain.

The most important point Dr. Long made is his incision puncture. We get away from tearing this open when we make the lateral incision and treat these as exploratory laparotomies. The more confined we are in these operations on these acute cases, the more we protect the general peritoneal cavity from general distributions of poison, the better the results will be, the fewer hernias we shall have, and the larger number of recoveries we shall have to the credit of surgery. In the uncomplicated cases, where you do not anticipate other troubles, the McBurney is the ideal operation. But in these acute cases which you see in forty-eight hours, where you suspect a gangrenous appendix, in a small transverse incision, cutting through the skin, separating the internal oblique, then the transversalis fascia, you have one and a half-inch opening, and one which is readily drained, where you separate for drainage. I do not know of anything that is a greater comfort in these cases.

Now, in conclusion, I wish to emphasize that I do not know how to tell any one when to drain. I tried to make one point about how to drain. Dr. Long made a point in reference to gauze

drainage. Don't drain in the vicinity of any hollow viscus with gauze. When you do that you tend to induce a fistula, and that is especially true of the upper abdomen in the vicinity of the duodenum; and that point was made by Dr. Long in the paper which he sent me, and which I think is a valuable one. It might be rubber tissue.

ACUTE HEMATOGENOUS UNILATERAL INFECTION OF THE KIDNEY. WITH REPORT OF AN UNUSUAL CASE

By J. M. Maury, M.D., F.A.C.S.,
Memphis, Tenn.

A study of the routes by which infections may reach the kidney, and especially a study of all the factors which enter into what is known as ascending infections, is most interesting. However, as the case which I wish to report is one of hematogenous infection, or infection by the blood stream, my remarks will be confined to that phase of the subject.

First in 1904, and in several articles since then, Brewer has been instrumental in bringing this subject before the profession. Since then the work of Cobb, Cotton, Cunningham and others has been of value in putting the subject on a rational basis, elucidating the pathological changes and in classifying the cases into those which should be treated surgically and those in which medical treatment may be expected to suffice.

The kidney is singularly capable of the elimination of toxins and even bacteria, provided the ureter and ureteric outlet be in normal condition. If, however, a septic embolus finds lodgment in the cortex, or, it is said, if even one organism of sufficient virulence be lodged in a glomerulus, there results the acute unilateral infection which is the subject under consideration. A point of infection is thus started which spreads by the lymphatics, along planes of connective tissue and through the tubules until the whole cortex may be the seat of numerous miliary abscesses. If the organism be one of the less virulent ones the result is not abscess formation but, as described by Cunningham, "a diffuse inflammation extending through the kidney without abscess formation or solution of tissue."

In reading reported cases one is struck by the number diagnosed as appendicitis, and this is more apt to be the case because the urinary findings are limited to a trace of albumin, a few casts and a few blood and pus cells. The onset is usually a sudden attack of pain, but careful examination will reveal the tenderness to be greatest at the costo-vertebral angle. Nausea and vomiting are common symptoms and there is of course a rise of temperature and the leukocytosis of septic conditions.

The symptoms of the two forms of the disease differ only in degree, though, according to Cunningham, the diffuse form without abscess formation gives a less severe systemic reaction and more pronounced evidences of kidney lesion as revealed by examination of the urine,—albumin, casts, pus and blood being in greater abundance.

The diffuse form usually responds to rest, diet, water and urinary antiseptics, while abscess-formation always demands surgical intervention. When the cortex of the kidney is studded with miliary abscesses nothing short of nephrectomy will suffice; but when the suppuration is limited to one pole, removal of the infected area by resection or curetting with drainage is sufficient.

CASE REPORT

The case which I report presents more than the usual difficulties of diagnosis and a complication which was rather unusual.

On the afternoon of November 10, 1914, when I first saw the patient, his temperature was 101.5°, pulse 112, and though fairly comfortable, he looked sick. The abdomen was flat and a mass, 3½x2½ inches reaching to within two inches of McBurney's point, was distinctly visible. The mass was hard, moderately tender and could not be palpated through the loin, though there was some tenderness in this region. White count, 12,000. The urine contained a few pus cells, a trace of albumin and some hyalin casts.

Taking into consideration the sudden onset, the location of the mass, the little involvement of the general peritoneal cavity and the paucity of urinary findings, the diagnosis was appendiceal abscess with the appendix turned outward and confined between the lateral wall of the iliac fossa and the cecum.

Entering the peritoneal cavity through an incision over the mass, I found the cecum high, the appendix normal and both closely applied to the mass which was in the cellular tissue behind the bowel and evidently connected with the

lower pole of a kidney which was displaced downward.

The relation of the appendix to the mass was such that I feared to open a pus pocket into the peritoneal cavity if an attempt were made to pass a ligature under it, so the appendix was not removed. Closing the incision and making one on the loin, an abscess was encountered in the lower pole of the kidney, which had ruptured through the capsule and infected the surrounding cellular tissue. Isolating and bringing up the kidney revealed no other lesion, so it was returned to its bed and the wound closed around a rubber drainage tube.

Recovery was slow; the wound became infected; and at the end of the third week a metastatic abscess developed in the prostate which gave rise to an elevation of temperature, great dysuria and materially lengthened his convalescence. Ten days later the abscess ruptured through the urethra; improvement commenced, and he left the hospital in fairly good condition.

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TRAUMATIC ASPHYXIA*

By J. Garland Sherrill, M.D., F.A.C.S., Louisville, Ky.

Traumatic asphyxia (pressure stasis, ecchymotic mask) is a condition of sufficient rarity to justify its consideration by this Association. The following case, which came under observation recently, has drawn our attention to the subject, especially since the injury producing it was somewhat unusual for such result:

On October 21, 1916, W. L., a bridge builder, aged 35 years, was injured in the following manner: The top chords of a new truss were being placed in final position. The patient was helping make the connection when he was caught between the ends of the chords and squeezed, doubling him up and bringing his head down upon his knees. The weight of the chords is very great. It is estimated by the patient that at least seven tons was the weight of the end which came down upon him. No accurate statement of the time this chord was pressing upon him could be obtained, but it must have been of brief duration. When first seen, within an hour from the time of the injury, he presented marked ecchymosis and swelling over the head and forehead and down to the malar bones. This area was dark purple in color and clearly delineated by an abrupt margin where the healthy color of the skin joined the swollen discolored part. Pressure did not affect the discoloration. There was present a subconjunctival hemorrhage on each side which was bright red, contrasting strongly with the purplish discoloration of the adjacent tissues,—a striking appearance. Rupture of each ear drum with hemorrhage from the ear canal was noted. Bleeding also occurred from the nose. There was a bruise of the right shoulder, also slight bruises over the chest and abdomen of insignificant extent, and a fracture of the seventh rib on the right side. A very slight boss of the spine presented in the lower thoracic region, which was probably occupational, although the possibility of its having resulted from the injury was considered. There were no other evidences of spinal injury to confirm such a diagnosis. The patient was fully conscious and the reflexes were normal, with no evidence of cerebral injury. The pupils were equal and responsive to light and accommodation.

The diagnosis of traumatic asphyxia was confirmed by the subsequent history of the case. The discoloration of the skin cleared up promptly in about three or four days, that under the conjunctivæ persisting much longer. The patient recovered without untoward incident, leaving the hospital upon November 8.

From a study of the literature at hand the conclusion may be reached that this condition usually results from sudden and forcible compression of the chest and abdomen, while the head and perhaps the extremities are not compressed. Usually the pressure upon the chest is in an antero-posterior direction, but it may be applied laterally. In the case herewith reported there is some question as to the direction and the character of the pressure upon the chest. It would appear that the chest was crowded forward upon the abdomen in such a way that respiratory effort was impossible. In addition to this, however, the neck was pushed forward firmly toward the chest, resulting in the constriction of the veins in the neck similar to that occurring from strangulation by hanging. This case seems even more strongly than the others reported to show that the discoloration is due to increased venous pressure, although most observers have held that this is of prime importance and acts on the superficial veins of the face and head because of the lack of tissue support and the incompetence of the valves. This contention is also supported by the fact that in the case reported by Bolt the discoloration occurred everywhere over the face and head except where a snugly fitting cap pressed upon the head. The same effect is shown by

*Read before Southern Surgical and Gynecological Association, White Sulphur Springs, W. Va., Dec. 11-13, 1916.

the pressure of the collar as noted in Winslow's case.

The pathology of these cases varies only in extent and degree and depends largely upon the amount of compression and the length of time it continues. It consists in discoloration of the skin from venous distention or hemorrhage in varying degree, subconjunctival hemorrhage, rupture of the ear drum with hemorrhage from the canal and epistaxis, and swelling of the skin. The latter and the discoloration also being limited to places that are not subjected to supporting pressure and usually extending no lower than the clavicle, although in some rare instances there is some discoloration in the axilla. Discoloration in the soft tissues disappears very promptly in the course of a few days; that of the conjunctivæ at times persists for several weeks. Coincident injuries, of course, make the other pathological changes different in each case.

There are usually no cerebral lesions present, although in some instances transient blindness has been noted. This has been attributed to the fact that the veins going to the brain are supported properly by the surrounding tissues, which is not the case in the more superficial veins. In the latter the inadequacy of the valves can be proven by the fact that the injection of the vena cava in the dissecting room distends the superficial veins of the neck, while those of the arms are unaffected.

The superficial observer would be likely to conclude that the discoloration was due to either asphyxiation, to subcutaneous hemorrhage, or local ecchymosis. The first theory can easily be refuted by the fact that the discoloration is distinctly localized, thus differing from asphyxiation. The second hypothesis, that extravasations of blood take place as the result of the venous engorgement and pressure, may be, in part, true, as shown by the subconjunctival extravasations and by the hemorrhages which take place from the ears and nose.

Hueter made experimental studies upon rabbits and concludes that the discoloration is probably due to stasis of blood from mechanical causes: (1) the upward pressure of blood dilates the vessels of the face and (2) the pressure upon the sympathetic nerves of the abdomen and thorax leads to a paralysis of the vessel walls.

Perthes, after observing two of these cases, concludes that the cause of the discoloration is extravasation of blood, either minute subcutaneous effusions or hemorrhages. He concludes also that following severe contusions with compression of the thorax, marked effusion of blood may occur in the head and its neighboring tissues without other evidence of any injury to the head itself.

Beach and Cobb, from the examination of skin taken from the living patient, concluded that there were no hemorrhages of any size whatever into the skin, and that the discoloration was due to a stasis from a mechanical overdistention of the veins and capillaries with or without paralysis from engorgement, or to pressure on the sympathetic nerves.

It seems to the writer, however, that their conclusion is only in part correct, since the hemorrhage from the ears and nose, recorded in a number of cases, would point to the possibility at least of hemorrhages into the subcutaneous tissues as well as into the subconjunctival space which has been noted in a number of instances. It would appear more probable that in the cases of minor degree the discoloration may result from the distention of the veins without extravasation, while in the more severe forms the possibility of hemorrhage into the tissues must be admitted.

The symptoms of this condition are marked discoloration in the skin of the head, face and neck, extending down to the clavicle. Posteriorly there is in some cases marked extravasation over the trapezius muscles. The ears are sometimes not involved, neither is there discoloration nor swelling under a tightly-fitting cap, nor where the pressure of a collar supports the neck. The conjunctivæ are very red and in striking contrast to the purple mottled appearance of the remainder of the skin. The lips and tongue may be somewhat swollen and together with the mucous membrane exhibit the same purplish tint as the skin, and hemorrhages may occur from the nose and ears. The patient may be momentarily unconscious, although this symptom is not frequently seen, and disappears in a short time. Of

course one must not overlook the possibility of concomitant injuries of a serious nature in these cases. The discoloration usually disappears rather promptly, except that under the conjunctivæ, which persists for a longer time.

The prognosis is usually favorable, recovery taking place in most cases quite promptly. It will depend, of course, to a large degree upon the amount of pressure and the length of time which it is applied, as well as the gravity of coincident injuries. From the nature of the injury and its manner of occurrence, surgical aid can rarely be had immediately. However, when possible, the immediate use of artificial respiration and oxygen should be employed. Usually shock is slight, except where the accompanying injuries are severe. The subsequent treatment should consist in combating shock if it is present, keeping the patient at rest and meeting indications as they arise.

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AUTHORS' ABSTRACTS

Surgery, Gynecology, Obstetrics and Genito-Urinary Diseases

Interperitoneal Adhesions and Their Prevention. George Gellhorn, St. Louis, Mo. New York Medical Journal, Vol. CV., No. 8, February 24, 1917, p. 358.

Critique of a paper by Behan and Nealon, of Pittsburg, who recommend the routine application of a 5 % boric acid lanolin paste to denuded peritoneal surfaces for the purpose of preventing post-operative adhesions. Gellhorn has experimented with lanolin as early as 1907 and found that the addition of boric acid did not only not prevent adhesions, but, on the contrary, resulted in exceptionally dense adhesions. Lanolin alone may occasionally prevent or limit the formation of post-operative adhesions, but the successes obtained are neither numerous nor decisive enough to warrant the routine application of lanolin as advocated and practiced by Behan and Nealon. Moreover, post-operative adhesions are due to such a multitude of causes, even in the same individual, that no single preventive measure can possibly be counted upon with security.

Appendectomy Reduced to Ultra Simplicity: The Inguinal Canal as a Means of Access; a One-inch Incision and One Suture Closure; Local Anesthesia, with Total Confinement of Three Days; Report of Fifty-one Cases. J. T. Nix, Jr., New Orleans, La. New Orleans Medical and Surgical Journal, Vol. LXIX., No. 10, April, 1917, p. 709.

The inguinal canal is selected as the avenue of access because:

1. It is low in the abdominal wall and permits digital exploration of the pelvis.

2. At this site the peritoneum is not in contact with the abdominal wall, but is separated by a pad of fat, which lessens the likelihood of post-operative hernia.

3. Even though the appendix may lie in many directions, its base is a fixed point at the lower border of the cecum, and when the proximal colon is distended it slides on the smooth, oblique peritoneal floor, the base of the appendix corresponding to a point near the internal abdominal ring, as can be demonstrated by X-ray findings.

For these reasons we so often find the appendix in the sac of a right inguinal hernia and in relation with or involved in the inflammatory process of a right tube or ovary.

The appendix is never at McBurney's point unless anamolous.

If the appendix is retro-cecal and adherent, it may not be delivered into the incision but is enucleated by peeling it out subperitoneally and in a retrograde manner. This does not apply to acutely inflamed appendices at the point of rupture.

As the incision is almost over the base of the appendix, only a small cut one inch long is made and the remainder of the operation finished as in the gridiron technique, the strong fibres of the conjoined tendon being divided.

The incision is between but does not divide the

circular fibres of the external and internal rings.

The inguinal canal is not weakened, but strengthened, by the strong purse-string catgut closure taking in the external oblique, conjoined tendon, pre-peritoneal fat and peritoneum, thereby tightening this normal aperture at its weakest point without constricting the cord.

Local anesthesia is often used and because of the many advantages offered by Nature in the inginal canal, which is adopted as the point of election for entrance into the cavity, the patient is let up and allowed to walk in forty-eight hours and leave the institution on the third day.

Of fifty-one cases reported no contraindications have been noted.

Septic Abortion. Ralph W. Brown, Roanoke, Va. Virginia Medical Semi-Monthly, Vol. XXI., No. 24, March 23, 1917, p. 606.

Some things we ought to do, and some should never be done. The etiology often determines the treatment.

Prophylaxis.—Many simple abortions become septic through the carelessness of the attending physicians. Thoroughly prepare the patient and use gloves under all circumstances. Instructing the laymen as opportunity affords about the dangers of criminal abortions will reduce remarkably the number of septic cases. Unobserved foci in the tonsils, throat, and elsewhere may lead to death of the embryo and secondary sepsis. Rest in bed, catharsis and then water by the Murphy method for all types of cases. Examination (microscopic) of lochia determines the type of infection. In milder forms use expectant treatment. Empty uterus by means, first, of the finger (Whitridge Williams and others); second, by means of strips of gauze twisted in utero by long Kelly clamps; third, a perfectly dull uterine scoop. Treatment of severe infections: Use no form of instrument that will cause hemorrhage, thereby increasing absorption of toxins. Don't hasten to interfere, as all forms of treatment are dangerous and unsatisfactory. Antistreptococcic serum is of doubtful utility. Abdominal section is necessary at times. A normal saline intra-uterine douche at the time of operation is good, but should not be repeated.

The expectant treatment is frequently the safest when in doubt. Light infections often take care of themselves. Therefore, do not be too hasty to operate. In severe general infections, a good abdominal surgeon should be in consultation, as it is diffiicult to know whether to temporize or interfere.

Do not use a curette, as you will only make a bad matter worse.

Syphilitic Metrorrhagia. J. Farbach, Louisville, Ky. The Urologic and Cutaneous Review, Vol. XXI, No. 3, March, 1917, p. 149.

Syphilis of the uterus is given scant mention in our reference books. That there are actual syphilitic lesions in the uterus that give rise to clinical symptoms there can be no doubt and then some are not as rare as one would suppose from the lack of literature on the subject.

Three cases of metrorrhagia were observed that were due to a syphilitic process, *per se.* They did not answer the surgical and therapeutic measures applied until a diagnosis of syphilis had been made and anti-luetic treatment instituted, under which the clinical and subjective symptoms promptly disappeared.

Lesions may be present in all stages of the infection, but those coming under the writer's observation were either tertiary or latent.

In the case reported the patient was a mother of two children. The first, ten years old, gave all the signs of inherited lues, Hutchinson teeth, interstitial keratitis, etc.

The second child, aged seven, showed no evidence of syphilis. The mother never had taken any specific medication before or during either pregnancy. The father and mother both denied syphilis. Four months ago the mother had a sudden, painless, profuse uterine hemorrhage. Bleeding was copious for five days and then grew less, but persisted. A surgeon suspecting abortion had performed cervical dilatation and curettage. Hemorrhage continued. No objective cause for bleeding could be found. The Wassermann reaction was positive. Antiluetic treatment was instituted and the symptom cleared up.

Myomas of the Uterus, with Special Reference to Myomectomy. William J. Mayo, Rochester, Minn. The Journal of the American Medical Association, Vol. LXVIII., No. 12, March 24, 1917, p. 887.

In discussing myomectomy for myomas of the uterus, the writer summarizes as follows:

Myomectomy for myomas of the uterus has not been a popular operation. It has been urged against it, first, that the mortality of the procedure itself is higher than that of hysterectomy, and, second, that more tumors would develop and necessitate hysterectomy later. As to the mortality: From January 1, 1891, to September 1, 1916, his clinic did 504 consecutive myomectomies with four deaths in the hospital, a mortality of 0.8 %. As to the second objection, only five patients required hysterectomy later for any cause.

Fourteen patients were pregnant at the time the myomectomy was performed, and the majority went to term and were delivered of living babies. When it is considered that in the latter group the tumors were degenerating with acute symptoms, and that in a large proportion indications of spontaneous emptying of the uterus were present at the time of the operation, it is remarkable that the disturbance so frequently quieted down without premature expulsion of the child. In not a single instance have we been obliged to do hysterectomy on the pregnant myomatous uterus with a non-viable child.

Twenty-four of our 504 myomectomized patients have had living children since the operation, and seven have had two or more. Thirty-eight living children to date following myomectomy is a strong argument for the conservative operation. Five others are normally pregnant now.

From this investigation as to actual results covering a period of twenty-five years, it is evident that the operation of myomectomy has not received the attention it merits.

MILITARY, RAILWAY AND EMERGENCY SURGERY

BATHING FACILITIES AND HABITS OF THE SOLDIERS AND OFFICERS OF THE ARMY*

By C. C. McCulloch, Jr., M.D.,
Lieutenant-Colonel, U. S. A.; Professor of Military Hygiene, Army Medical School,
Washington, D. C.

Classical references to the bathing habits of soldiers seem, on casual investigation, rather far to seek. In the Odyssey, the feet of Ulysses are washed upon his return to Ithaca by his old nurse Eurycleia, who recognizes the wanderer by a scar upon his knee. This scene is represented in relief upon a marble *ex voto* now in the National Museum at Athens and on many Greek gems and vases. In another Greek legend, the hero Theseus, who, among other military exploits, fought with the Amazons, is compelled to wash his feet upon the brink of a narrow cliff overlooking the sea by a gigantic robber, Sciron, who dashes him into the water by tripping his foot. Theseus frees the land of the bully by throwing him from the cliff by one foot, or according to another account by knocking him on the head with his own iron foot bath.

"This be thy guide, O man of woman born,
Bathe well thy body at the break of morn;
But if ye would ablutions make complete
Neglect ye not that pair of precious feet;"

advice that would not come amiss to the present-day soldier.

A Greek vase in the Louvre depicts a scene which may have a bearing upon military hygiene. In the right upper quadrant we see the projecting feet of a youth; at the left is a figure of the attendant in the act of wringing out the sponge into the decorated foot bath which bears the stock inscription "*kalos*," which might here be translated by the legend on some commercial products—"best by test." At the extreme left hang the youth's sandals, and the inscription "*erchetai*" tells us that "he makes himself ready for marching."—Sudhoff.

When, toward the end of their famous march, there burst forth from Xenophon's soldiers their involuntary exclamation, "*Thalatta, thalatta,*" let us hope that mingled with their natural delight at that manifest evidence of the approaching end of their so difficult campaign, there was at least in subconsciousness the hope of the early accomplishment of the (perhaps 'till then) unfulfilled desire of completely and thoroughly washing away the distressing accumulations of the dusty and arduous parasangs that they had lately marched. However, it has been said that the Greeks regarded too frequent baths as a mark of effeminacy.

The so many eloquent remains of Roman baths and aqueducts, speaking as they do of the love of cleanliness of that noble race, lead us to suppose that in their armies as well as at home they must have devised some effective means of bathing and of personal hygiene. Seyffert relates that the Romans were so fond of the bath that if the emperor or a rich citizen presented the people with a free bath for a day, a longer period, or in perpetuity, he won the credit of exceptional liberality.

In the middle ages, with their prevalent epidemics of plague, and typhus, and dirt diseases, particularly in armies and in campaigns and wars, we must conclude that the adequate practice of personal cleanliness could not have been at all widespread.

Coming down to more modern times, however, one is gratified to find that in Headley's "Napoleon and His Marshals," the well-known book of our boyhood days, there is a plate entitled "Toilet of the Guard," representing the members of the famous Old Guard in the act of performing their ablutions. Still more recent

*An address delivered before the American Association for Promoting Hygiene and Public Baths, at Pittsburg, Pa., May 8, 1917.

French pictures and photographs show the use of the effective device of turning a hose frankly upon the naked enlisted men in the wash room of the barracks, an expedient which might be utilized in the field even now where water pipes have been laid in, but where shower baths and convenient pools of water are not available. Thus a stream of water from a simple garden hose ought to be very effective in cleansing the body, especially its hairy portions, and would no doubt afford a refreshing and even humorous diversion for the men. The tales we have all heard from the returned heroes of the Civil War, both Union and Confederate, in regard to the general prevalence in their camps and prisons of the famous "gray backs" certainly lend weight to the idea that their methods of personal hygiene and bathing and washing of clothing were in those days far from adequate.

Taking up the bathing habits and methods in vogue in armies prior to the outbreak of the present European War, I was truly astonished to find, as the reader will no doubt also be, that the situation in reference to the English Army was described as follows by a well-known Brigade-Surgeon of the British Army in a lecture at the Royal Artillery Institution. True, this was delivered in 1894, and conditions, no doubt, were much improved in the next twenty years. He said that he could not exaggerate the defective condition as regards cleanliness of the person of the British soldier. A man comes up before his officer well dressed and well turned out, but he is a whited sepulchre, for the condition of his person and the odor that comes from him are very unpleasant. This odor, this *esprit de corps* in the very worst sense, which comes from the body of the soldier is most offensive; if any one will come over to the auxiliary hospital in the morning he will have a smell like the odor of a troop ship in the Red Sea. He says that from October 15 to April 15 all bathing ceases in some garrisons and the body of the soldier is not washed at all. He says that this comes before the doctor in the most striking way, that he has to examine the chest and the odor is most trying—that cubic space is based on the clean man, but you have this man going to bed in the barracks room with his body not washed, so that the air becomes offensive and tainted, and this affects the health, the fitness and in the end the discipline of the soldier. This condition was attributed by the author to an insufficient allowance in the Army Regulations of bathing fixtures for the soldiers; this was 1 %, and undoubtedly much too little. (We allow at least 6 %.) One doubts, however, if this is a sufficient explanation; it would seem, indeed, that such habits in the Army must merely be a reflex of those that prevailed in the class of the population from which the British regular soldier was drawn.

It had really never occurred to me that there could be such a wide discrepancy between the bathing customs of the English officer, whose exaggerated cleanliness is proverbial, and the private soldier, Tommy Atkins.

I am indeed glad to assure the members of the Association for Promoting Hygiene and Public Baths that no such differences exist in the American Army, but that our conditions and habits in this respect have been for years past what I should term highly satisfactory, both from the hygienic and esthetic standpoints. Practically all our modern Army posts have installations of water and sewer systems, and in connection with each set of company barracks there is situated, usually in the basement, though sometimes detached in the rear of the building, a completely equipped lavatory with adequate bathing facilities. The former arrangement is quite satisfactory, provided the plumbing system is good, and lends itself to convenience and economy, especially in heating. In the later installations, the shower bath is used instead of the tub method, which is insanitary as well as inconvenient and expensive, and also requires a much greater expenditure of water.

I can say, and I think without exaggeration, that the daily bath is now the almost universal custom of the soldiers in the United States Army. I am speaking here, of course, of life in barracks in time of peace. There is indeed a sort of *esprit* in the average company which requires the recruit, who may not thoroughly appreciate the advantages of per-

sonal cleanliness, to adapt himself quickly to the more strenuous habits of his comrades under pain of personal unpopularity and even social isolation.

These splendid results along this line are due, I have no doubt, to the unbounded energy and preachment in and out of season of the doctrines of personal hygiene by Woodhull, Hoff, Havard and others of our distinguished Army sanitarians of the old school, now unfortunately retired from active service. Havard is particularly happy in his style, his "Manual of Military Hygiene" being *facile princeps* among the many works that have been written upon this subject. It is scientific, thorough, and up to date.

Havard says that we bathe and wash the skin (1) to promote and stimulate its physiological functions of excretion; and (2) to remove dirt and prevent the breeding of germs on its surface. This point is of particular importance in the crowded conditions of barrack and camp life in connection with the liability to the propagation of infectious diseases by personal contact. A notorious case in point is that of the spread of typhoid fever in our home camps in the Spanish War times. Much of this disease incidence, according to the Vaughan Board, might have been prevented by the application of more careful methods of personal cleanliness. (3) To prevent fouling of the surrounding air by accumulated filth. (4) For the tonic and stimulating effect of cold water upon the nervous system.

Havard recommends for the soldier the general shower bath, daily when possible, but at least twice a week, individual soap, preferably of a kind approximately neutral in reaction, and the individual towel. The feet, at least, should be bathed daily in cold water, and their care is of great importance in the field, especially on getting into camp after the march. The hands should be washed, preferably in running water, before eating and after defecating.

"While bathing, the soldier should give special attention to the hairy parts of the body, under the arms and about the genitals and anus. The secretions from the mucous membrane of the prepuce, particularly in men with long foreskin, soon become acrid and irritating and should be regularly washed out. In such cases, circumcision is often advisable. The skin around the anus, as well as the anus itself, especially in case of hemorrhoids, must also be thoroughly cleaned."

In the field, also, our American army habits in this respect are quite satisfactory in time of peace. In our semi-permanent camps it is the custom to lay in a piped water supply and erect the Army Regulation field lavatory. This, for one company, is a knock-down building 25 feet in length by 8½ feet in width, and contains five simply constructed shower baths and one wash sink ten feet long with four faucets. When necessary, more simply constructed sheds may of course be improvised. On the Mexican border Major Saville, of the Quartermaster Corps, devised a satisfactory apparatus for heating the water for field baths. He used a thirty-gallon boiler with three-fourths-inch galvanized iron pipe coils, the latter set in a simple brick furnace, all being covered over with adobe to conserve heat.

Again quoting Havard:

"The men should not only bathe themselves, but also wash their linen whenever the opportunity offers so that it may always be as fresh and clean as conditions permit. Then not only will they save themselves and comrades from possible contamination by germs of typhoid fever, cholera or dysentery, but in case of a battle they will be much less likely to suffer from wound infection, for this dangerous complication very seldom results from the slender, hard bullet of the modern rifle, but almost always from dirty skin and clothing. The hands are the most dangerous agent of disease transmission in camp, and therefore must be frequently washed."

In camps where there is no piped supply, it is sometimes practicable for the soldiers to bathe in a near-by stream, always, of course, below the source of the water supplies. Again, shower baths are improvised. A very satisfactory one can be made with a five-gallon oil can with small nail holes punctured in the bottom, a simple handle of some kind attached and the whole apparatus suspended by a rope over a tree limb or a beam, after being filled with water. The English have devised a simple framework to hold these tins, including a sloping wooden floor and trough to drain off the water. Officers often use folding rubber bath tubs. Tin tubs of various shapes and sizes, of course, gradually accumulate in a semi-permanent camp. The only difficulty with these methods is of course the

transportation of sufficient water. The disposal of the waste water from these extemporized bathing places is, by the way, a sanitary matter of considerable importance in large camps. The method found most satisfactory on the Mexican border was to collect the sullage water in large pits which were pumped out at intervals by the so-called "odorless excavator."

To repeat, in my opinion there is no particular problem requiring solution in regard to the bathing facilities and habits of our soldiers in barracks or in camps in time of peace. That is the main point, I imagine, in which this Association is interested in this connection. If I have enlarged upon some of the elementary truisms of personal hygiene, it has been with the idea in mind of a prospective large expansion of our military forces, which must consist in their early stages of large collections of untrained troops who must learn, among many other things, the very important matter of taking care of themselves and their personal health in camp. Such troops often fail to apply the simplest rules of hygiene, as they did even so late as in the Spanish-American War. The answer to this problem is, to my mind, intensive, thorough military training carried out over a sufficiently long period of time,—I should say approximately a year.

Since the Civil War we have had in this country no experience with the mobilization of very large bodies of troops, nor with such conditions as are now operating in the trench warfare abroad.

I think, therefore, that the most instructive thing we can at present do in regard to the study of the question of bathing in the Army is briefly to review some of the methods that have been adapted in the foreign armies to the peculiar circumstances of the present war and to the necessity of handling such large bodies of men. We may, before the war is over, have similar problems of our own to solve, and forewarned is forearmed. It is just as well to begin to think over these details now, before the necessity to employ them has arisen, certainly better than to leave their study to a time when they will be forced upon us suddenly and without preparation by some kind of big epidemic or other plague.

If you have not previously read of it, you will perhaps be surprised to learn that of all the nations engaged in the world war, the Russians first attempted the solution of this question of bathing troops by wholesale, and judging from the available literature, have, since the beginning of the war, paid it the most attention. Indeed, it is stated, and by a reliable French writer, that in the first weeks of the present war, the Russians had sent to the front thirty trains of comfortable "rolling baths," as he calls them. This is hard to believe, and I do not find the statement confirmed in other literature, but it is possibly true, judging from the well known habits of personal cleanliness of the Russians, even the lower classes.

Wherever the troops are conveniently situated with regard to a railway line, that is, where they are not operating in advance of the railhead, there is no doubt that these bathing trains offer the best possible solution of the difficult problem of bathing large numbers of men quickly. They are invaluable, but their zone of operation is limited. It must not be forgotten, in this connection, that owing to the presence in Europe of typhus fever, and to the peculiar conditions of the modern trench warfare, any effective plan for bathing troops on a large scale must also include means for the disinfection of vermin-infested clothing.

Various bathing methods have been devised for the troops during the progress of the war, some of them showing much ingenuity.

I shall first describe briefly a few of the more practicable Russian improvisations as described in the *Voyenno-Meditsinsky Journal*, Petrograd, 1915-16.

I. V. I. Barbarin has expressed his "deep conviction of the usefulness" of what we may call the *hut method* of bathing soldiers, as modified and employed by him among the Russian troops in frontal positions. A peasant's hut is *rented* (note the contrast with German economic methods in France), preferably with two rooms, one being used for dressing. In the bath room are set up two iron stoves, each consisting of a furnace and a tank of

about 13.5 gallons capacity. Serpentine iron stove pipes furnished with ribs to increase the heating surface lead out of the stoves. When practicable to carry it, a boiler of forty to fifty gallons capacity is added to the installation. Barrels for extra heated water and for cold water (also rented in a near-by village) and pails from the quartermaster stores are supplied. The packing boxes for the apparatus may be used for improvising benches and shelves. Water is generally obtained from a well in the adjacent yard and soldiers are sent out in advance to cut wood for fuel. The room is heated by pouring water over the red hot stove pipes. Water can be made ready within thirty to forty minutes after setting up the apparatus. When economy is necessary, each man is allowed about 2.7 gallons of water for a bath, and this small quantity had led to no complaints. About 700 men can be bathed per day. The soiled linen is put in bags and boiled, mended and dried by washerwomen in a neighboring village, eight of whom can do about 200 suits per day. Boiling of the clothing is necessary to destroy the vermin. This system, and indeed any other that is really effective, obviously requires reserves of fresh linen to be on hand for issue at the bath. Each stove weighs about 650 pounds and the apparatus for two such baths as above described can be transported on one wagon. They are usually set up about three kilometers from the firing line. The main objection to this hut method is that it does not handle a large enough number of men in a given time.

The idea has been expanded, especially by the English, in suitable places, by taking over empty manufacturing plants and practically remodeling their rooms, and vats, and boilers, and water systems, into bathing and disinfecting pavilions. When possible, this is of course a most satisfactory as well as economical method. Dr. George Vitoux, in the *Revue d'Hygiene et de Police Sanitaries* for 1915, describes a substitute for the hut method that has been practically applied at the front, even in the trenches themselves. A pit is made of about six meters in diameter, paved with brick gathered up from the sites of demolished houses, all covered over with a sheet-iron roof on which earth is spread and the sod transplanted. On the roof a large tub is placed which has four outlets with stopcocks at the bottom which communicate through the roof with four sprinklers for shower baths. Under each of these is placed a tub. Beside the tub on the roof there is installed a boiler for heating the water. In the bathing apartments a stove is placed for heating. Everything necessary for an installation of this character can be improvised—some tubs or hogsheads sawed in two, some pieces of piping, sprinklers of watering pots obtained in a neighboring village, a few men and a professional plumber from the troops, and the apparatus is easily and quickly constructed.

Dr. J. J. Matignon, of the French Army, has invented a clever device, when there is a stable handy. He asks what is really absolutely necessary for bathing and answers three things only: (1) a warm place; (2) warm water; and (3) receivers. For the hot water he used the rolling kitchens recently adopted for the Army, each of 500 liters capacity and which permit of hot water being supplied at will and everywhere. As receivers he used tubs made by barrels cut in two, and for the warm place a stable containing a number of horses, the atmosphere being rendered sufficiently warm by what he terms the "central animal heat." The place and the necessary paraphernalia being found, a certain number of horses, say ten, are taken out and the improvised tubs are put in their places on the straw bed, which is first covered with a sort of latticed framework made up of brush to protect the feet of the bathers. The rolling kitchen is placed behind the door, all the exits of the stable are carefully closed to conserve the heat and shut out currents of air, and the bathing seance is ready to begin. Men in groups of ten enter, with soap and towels, and undress, and each one stands in a tub. Two men from the stretcher bearers pour the suitably heated water over the backs of the bathers from ordinary watering pots. Squatting down in the tubs, the men soap themselves over and then receive a second sprinkling. The whole operation can be performed in five or six minutes — about one hundred men can

thus be bathed in an hour with a minimum quantity of water. The method, while it works well, is faulty of course in that it can only be applied in certain localities.

II. S. I. Ignatyeff, to revert to the Russian methods, criticises the *hut* as allowing too little room, and as generally not providing sufficient drainage, and says the requisite conditions for the field bath are:

1. Portability and simplicity of construction;
2. Possibility of rapid heating (i. e., in one or two hours);
3. Free drainage away of the water used in bathing;
4. Possibility of the simultaneous bathing of at least 15 men;

and claims these are satisfied by what is known as the "*tent bath.*"

A circular tent is set up near a source of adequate water supply, a ditch being dug through its site for drainage purposes. The earthen floor is covered with straw (except near the stove). In one end of the tent is then placed an iron stove costing from three to five dollars in the small provincial towns, which has a long stove pipe leading out of the tent by two right-angled bends. A traveling company kitchen, filled with water, is brought in and its pipe led out through an opening. Cold water is supplied in any convenient receptacle. When put in operation, two or three companies of 150 men each can be bathed in a day. The straw bed catches the lice, and is removed and burned after the company has washed. The necessary apparatus is easily carried on a wagon.

III. V. A. Brink describes the more complicated and ambitious, but still practical *traveling bath* of the Sanitary Detachment of the Eighteenth Army Corps. He had conceived the desiderata of an effective bath to be as follows:

1. Simultaneously with the bathing, the enlisted men should also have their hair cut, and their clothing and linen disinfected and freed from insects.
2. The rapidity of passage through the bath should be not less than 100 men per hour, thus making it possible to wash a company—the Army unit—in a small interval of time.
3. The plan of the bath should be such that those who have been bathed should not come in contact with those who have not yet been bathed. In other words, the bath should be divided into soiled and clean halves.
4. The water used in bathing should be collected on a floor which can be dismantled and removed by disconnectable pipes.
5. The bath should possess great mobility, and the possibility of being set up in any convenient place.
6. The bathing pavilion should be provided with sufficient heat both for the air and for the floor.

Dr. Brink was furnished the opportunity by private means to construct a bath designed to carry out these ideals, and the military authorities supplied the men for its operation.

A large circular tent of about 23 yards in diameter is set up and in the center of this a smaller tent, the bath proper. In the space between the two tents a circular canvas wall is suspended on uprights, dividing this space into two circular corridors, an external and an internal one. In the external corridor are placed the anteroom of the disrobing chamber, the sterilization room with portable disinfecting apparatus, the anteroom of the dressing chamber, and the laundry with laundry machine for washing towels, etc. In the internal corridor are placed the undressing chamber, the barber shop, the distributing room for soap and bast-wisps, with an entrance door into the bathing tent, and the dressing room with doors leading out of the bathing tent, fenced off with compact transverse partitions from the undressing and distributing rooms. The arrangement described thus realizes the desired division of the bath into soiled and clean parts.

In the central bathing tent there is placed a floor of corrugated sheet iron in two semicircular halves, inclined toward the center, which may be taken apart. In the middle is laid a disconnectable gutter which serves for the removal of the waste water. On the surface of this floor as well as in the anterooms is placed a light wooden grating.

The heating of the floor of the internal corridor is accomplished by eight iron stoves, in form, Brink says, "like a bottle lying down," the stove pipes being laid under the grated floor and led out finally through asbestos-lined openings in the roof of the tent, as are similarly the smoke chimneys of the disinfecting and

laundry apparatus which assist in heating the anterooms.

The internal corridor receives the major part of the heating of its air space from the apparatus of the outer corridor just mentioned, and from the bathing tent, heated by the water heater. This is usually what is described in the technological dictionaries as a transportable water-tube boiler, though this can, when necessary, be replaced by the traveling kitchen. The water is carried in specially devised folding canvas receptacles of large dimensions, each of which is mounted on a cart. Galvanized iron tubs are used for bathing, a suitable method of installing showers, though a very desirable improvement, not yet having been devised. Experience has shown that quite adequate temperatures are thus obtained, even in winter.

The barber shop is provided with American hair-clipping machines and with hair collectors, which are bags hung around the necks of the individuals whose hair is being cut.

At the entrance to the anteroom of the disrobing chamber, a pavilion is attached to the main tent for the soldiers awaiting their turn to bathe. A similar pavilion has been attached at the exit from the anteroom of the dressing chamber, equipped by one of the Russian aid societies, and used as a tea-restaurant.

The train of the traveling bath as above outlined consists of twenty-four two-wheeled carts, six four-wheeled wagons, one traveling kitchen and three wagons for the tea-restaurant equipment.

The soldiers enter the undressing room in parties of ten to twenty; they disrobe and place their soiled clothing in numbered sacks, which are put through the disinfecting apparatus. They then go into the barber shop, where the hair is clipped close. Before he enters the bathing apartment, each man receives a sterilized bast-wisp and some naphtha soap. After bathing, they go into the dressing room and are given each a clean towel, clean linen and their disinfected and dried clothing. The bath can be put up and made ready to operate in three to four hours, and in case of alarm, can be dismantled and removed, without interfering with the troops, in less than an hour. It has not attracted the attention of aeroplanes. The disappearance of insects from the companies has been noted for several weeks at a time after the use by them of this method.

A Russian regiment of 4,000 to 4,500 men can be bathed in one and one-half to two days by this method, whereas in the hut method it could not be done in a week. The latter also takes at least twenty-four hours to install. Over the railway bath it has the advantage of mobility and the possibility of being sometimes pushed within a few kilometers of the firing line.

IV. A plan more modest and easier to realize than those just described is that of the *demountable transportable shower baths* of the French Service of Co-ordinations of Voluntary Aid for Soldiers.

This apparatus, once installed and started going, functions automatically.

It consists of a small boiler, accompanied by a fire box. The boiler has installed above it a reservoir of galvanized sheet iron of 120 liters capacity, and the water runs from it, through a metallic pipe, into the lower part of the boiler, where it comes into close contact with the fire box and thus is heated rapidly. A second pipe runs from the top part of the boiler into the reservoir at about the middle of its height, and the vapor thus introduced into the latter aids in the rapid elevation of the temperature of the water. Finally, a third pipe, provided with a stopcock, and attached to a system of smaller pipes disposed horizontally, conducts the warm water to the sprinklers of the shower baths, in number four, six or eight, according to the model of apparatus chosen.

The functioning of the apparatus is most simple. About ten minutes after lighting the fire the water reaches a temperature of 37 to 40° C., and if the reservoir is then fed with cold water to maintain a constant level, a continuous flow of water at a constant temperature is fed to all the sprinklers. A grating placed directly under the shower, with a bench placed a little behind it for the undressing of the men, completes the installation.

It serves for from 250 to 500 bathers per working day of six hours, according to the number of showers installed. It is

demountable, weighs about 150 kilograms, and can be carried in four packages of small dimensions. It costs about one hundred dollars, and is said to have been used with great satisfaction by numerous French regiments. The disadvantages are the comparatively small capacity and the difficulty of adaptation to winter conditions.

V. *The Bath Train.* — The Russian trains consist each of a score of made-over baggage cars drawn by a locomotive. At the head of the train are two tank cars containing water enough for twenty-four hours' work, heated to a suitable temperature by means of a supplementary boiler installed on the locomotive, which is also furnished with a steam pump for supplying the showers. Pumps are also installed on the tank car for supplying them with water, though the water is usually taken on from tanks at the railroad stations. Arrangements for vapor baths may be made in the central parts of the cars. Of the following cars, the next is used for undressing, the soiled clothing and linen being placed in bags for disinfection. Thence the soldiers, after being furnished soap and bast-wisps, pass into the three bath cars following *en suite*, each divided into about twenty small alcoves by sheet iron partitions for the hot baths and succeeding cold showers. Under the floors of the bathing cars there are placed suitable collectors to hold the waste water. There next follow two cars provided with couches, where the men are allowed to recline for a suitable time after the bath, and then two restaurant cars, in which they receive a substantial meal. The men then enter the next car, where they receive clean linen and their clothing, which has been previously mended, disinfected and dried. They are now, as Vitoux says, "fresh and disposed to return to the combat." As to the remaining cars, they are arranged to serve for disinfecting, for a drying room, for cooking, for lodging the personnel employed on the train, and as storerooms for linen and provisions. One car is used as a shoemaker shop and another as a mending room. There may be added a barber shop for cutting the hair. All the cars are heated by the locomotive by means of special tubing and joined together by warmth-conserving vestibule bellows. The cars are paneled with felt, cork and wood, to keep them warm. Arrangements for the electric lighting of the train can be made without great difficulty or expense, if desired.

Each train is capable of bathing, disinfecting and feeding from two to three thousand soldiers daily. The cost of the train, not counting the locomotive, is about $50,000, and the cost of maintenance, excluding new linen, $5,000 per month.

This scheme really looks like a counsel of perfection, and I must confess to some scepticism about it. However, as I said, the thing is vouched for on the testimony of a reliable French author.

It would be extremely interesting to learn the methods used by the Germans in bathing their soldiers in this war. Knowing their proverbial thoroughness of detail, it is to be inferred that they have devised methods that adequately handle the situation.

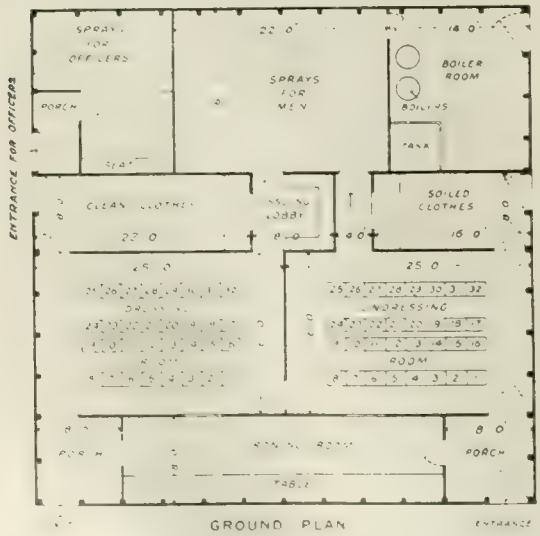
It is unfortunate that, owing to the lack of reliable mail communications between Germany and this country, and to other reasons, we have not had access to their medical literature for nearly two years past. The following translation of a paragraph in the *Psikhiatricheskaya Gazeta*, Petrograd, of November 15, 1915, page 376, is enlightening in this connection and as a testimony of the vaunted Teutonic Kultur:

> "By order of the Prussian Ministry of War, publishers of periodicals and other publications appertaining to medicine are prohibited from sending them abroad, even into neutral countries, be these journals, pamphlets or books on that specialty, in order to prevent physicians from using methods of treatment discovered since war operations had begun."

I find that Dr. Rudolf Rauch, in the *Berliner Klinische Wochenschrift* for May 17, 1915, describes a *proposed* railway bathing train. In a general way, the arrangements are similar to those of the Russian train described above, so it is unnecessary to go into detail concerning it. Suffice it to say, that it is cheaper of construction and simpler than the Russian train, so that in a train of the same dimensions it is estimated that 13,000 baths

can be given daily, or even 26,000 if the bathing time is reduced.

VI. In the *Journal of the Royal Army Medical Corps* for September, 1916, are described the latest English methods of bathing soldiers in the field. Captain H. Norman Goode outlines the plans of a divisional bath now used in one of the model British divisions. He speaks of the great difficulty of maintaining sanitary conditions in the trenches, especially with reference to the prevalence there of the so-called clothes or body louse, *Pediculus vestimentorum*, and the consequent necessity of baths and changes of the underclothing of the soldiers as soon as they come out of the trenches. In the installation that Captain Goode has devised the baths are contained in a portable frame building, presented by one of the British Aid Societies. In ground plan this building consists of large undressing and dressing rooms, a bath room with eight showers, an officers' shower bath, a room for soiled underclothing and a storehouse for clean linen, a boiler room and an ironing room where the khaki clothing is gone over with hot irons to destroy the lice, and where a Thresh disinfector for soiled linen is also installed.



The arrangement of these rooms is such as to conserve one of the main principles underlying all processes of disinfection; that is, to keep soiled and clean parts entirely separate.

"The water is pumped by means of a little petrol (gasoline) engine into a 1,600-gallon tank, twenty-four feet high. Thence it runs by gravity to the two connected tanks which feed the boilers, which are independent of one another. The water—hot, cold, or mixed hot and cold—feeds the light sprays by gravity, sprays being used to economize water, since only one and one-half to two gallons are required per man instead of six when using tubs."

At first water was carried to the bath in a motor tank from the nearest stream, often a mile or two away, but as a later development methods were devised of obtaining water locally; rain water is now collected off the roof, a shallow well has been dug, and a process has been invented and installed for disinfecting the sullage water and using it over and over again. All these sources of supply are connected up with the motor pump.

The procedure of going through the baths is practically the same as that in the methods previously described, and two thousand men can be bathed daily, allowing each man three minutes under the shower. The disinfected clothing is transported on wagons to a village some miles away, where it is washed and mended by hired washerwomen and returned to the camp a day or two later. There is necessarily some wastage in this process, and the method of course requires large stores of clean linen at the bathing plant, to be issued to the soldiers after their bath.

The method devised, after experimentation, by Captains Goode and Hughs, for disinfecting and cleaning the water draining from the baths so that it may be used over again, is quite ingenious. Briefly, it is as follows:

The soapy bath water is run into a mixing tank, where it is thoroughly mixed with slaked lime, which precipitates the soap as insoluble calcium stearates, also the dirt and impurities. The effluent thence flows through three settling tanks arranged in longitudinal series with partitions of framework covered with canvas, in the third of which washing soda is added, which precipitates the calcium salts and separates out the soluble oils from the soap. These oils float on the surface, whence they can be mechanically removed by canvas or sacking, nailed on wooden frames. From the third tank the water is run into a charcoal filter when, after filtration, it flows into a well and is

then pumped into the supply tank. The tanks are, of course, periodically cleaned out and the removed sludge is buried.

The inventor states this system "is characterized by its easy method of construction, its simplicity and mobility. It has now been working for several months and its results have proved satisfactory in every way. I can strongly recommend this method as highly suitable when large numbers of men have to be dealt with, and more especially in those places where water is scarce."

Indeed, it seems that outside of the baths *de luxe* of the Russians — the traveling bath trains—which are necessarily limited in application to cases where the camps are conveniently situated with reference to railway lines, this British method offers us the best system yet devised for bathing troops *en masse*.

In this connection it seems worth recording that Lieutenant-Colonel Copeman, of the British Army, has described a new method of handling the difficult problem of the management of waste water from bathing establishments, which consists in treating it with an otherwise valueless by-product of explosive factories. This is nitre-cake, which is chemically a crude acid sodium sulphate, of which hundreds of thousands of pounds are produced weekly.

Finally, leaving the collective methods, I would note the *individual camping douche* devised in France by M. Mantelet. This is applicable only on a small scale, but is suitable at least for officers. It weighs only a few hundred grammes and consists of a sort of sack made of impermeable cloth and of a capacity of about twelve liters. It has at its base a sprinkler with obturating valve, which is operated by an attached chain. The apparatus may be filled with water and suspended on a beam or ladder, or the branch of a tree. It is really complete and practical, so far as its operation can be made to extend.

I sincerely hope that the outline given, while very incomplete, owing to the present impossibility of more thorough examination of the war literature, will afford ideas which may give us a working basis for our efforts in relation to this most important subject of the personal hygiene of the soldier, which no doubt will ere long occupy largely the attention of our sanitarians, both civil and military.

FIRST AID TO THE INJURED AS IT APPLIES TO THE RAILROADS*

By R. W. Knox, M.D.,
Houston, Tex.

There has been no subject in recent times that has received a wider range of recognition than that of "First Aid to the Injured." While the movemnt has been growing in an organized way for several decades, it is only within recent years that it has become a world-wide movement. Undoubtedly the advances made in modern surgery and the exact knowledge of the causes of wound infection have done much to popularize and increase the efficiency of this branch of surgical work.

With the development of rapid modes of travel, multiplicity of machinery and congestion of population, the danger from accidental injury has been increased to such an extent that an additional protection has been found necessary. The movement has been stimulated, I am sure, more from an altruistic or humanitarian standpoint than from one of dollars and cents, although both viewpoints are well worth considering. Following out this principle, modern science has devoted its time, energy and money toward a means for preventing disease, rather than its cure, and with safety devices is attempting to minimize as far as possible the danger resulting from accidental injury.

It is a fact well known that slight injuries may become serious, and serious ones result fatally when not given the proper early attention. It is not necessary for me to dwell upon this phase of the subject, as the manner of infection in open wounds is generally recognized. The question now arises, "How shall we furnish the necessary aid in the absence of the surgeon?" It will be found by those who have never become interested in this question that the problem is more difficult than it appears at first sight. I have heard

*Read before First Annual Meeting of Texas Railway Surgeons' Association at Dallas, May 7, 1917.

men in charge of large institutions, but more especially railroad surgeons, make the statement that First Aid had been a failure in their hands. In fact, it is generally recognized that the medical profession is not in entire accord as to its value and importance. The reasons for this in my opinion can be explained satisfactorily and will be discussed in full when we take up the subject in greater detail.

It is a matter of common knowledge that the Red Cross, an institution under Government supervision, besides its many other important duties, is making a great success of First Aid. The same success has been accomplished in this work as a matter of routine by the Army, the Navy, and Public Health Service. Also many industrial institutions carry on the work in a beneficial way.

It is of interest to mention in this connection that the most important move undertaken in recent years for a general standardization of First Aid in its application to all forms of industry is now being planned by an association of men of national prominence. I shall take the liberty of going somewhat into the detail of this proposed method of standardization. The credit of the movement may be attributed largely to the efforts of Dr. Joseph C. Bloodgood, of Johns Hopkins University. A circular letter upon the subject signed by himself and a number of railroad chief surgeons and other representatives of labor were sent to the medical representatives of the Army and Navy, Public Health Service and industrial institutons for a meeting to be held in Washington, D. C. It was mentioned that the object of the meeting was to bring together civil surgeons, employers of labor, representatives of the Army, Navy and Public Health Service, and in fact all persons interested in the surgery of accidental wounds.

The statement was made that there seemed no doubt that if a representative body of surgeons could establish a uniform manual on the surgery of accidental wounds and a uniform First Aid Package, uniform First Aid Manual, uniform splints and methods of fixation and uniform methods of transportation, it would not only be made more economical but would add to the efficiency of the surgery of accidental wounds received in all kinds of industrial pursuits. Also if all the roads of the country and all the employers of labor would adopt this uniform system and begin at once its application in their treatment of accidental injuries, it would allow a large number of surgeons to test better the efficiency of this uniform method and from time to time make important changes if necessary. As a result of this call there was a large attendance at the first meeting, which was held in Washington, D. C., on August 23, 1915. The Conference adopted the following resolution:

"Whereas, There is a great lack of uniformity in First Aid methods, in First Aid Packages and in other First Aid equipment and in First Aid instruction; and,

"Whereas, Many of the aims of First Aid are defeated thereby and needless suffering and expense incurred; therefore, be it

"Resolved, That this Conference recommend to the President of the United States that he appoint a 'Board on First Aid Standardization,' said Board to consist of one officer from the Medical Corps of the United States Army, the Medical Corps of the United States Navy, the United States Public Health Service, the American National Red Cross, the American Surgical Association and the Association of Railway Chief Surgeons of America; this Board to deliberate carefully on First Aid methods, packages, equipment and instruction and to recommend a standard for each to a subsequent session of this Conference to be called by the permanent chairman; the creation and maintenance of the said Board to be without expense to the United States."

The Board appointed by the President met November 27, 1915, and elected the following officers: Dr. Richard H. Harte, Chairman; Col. Louis A. LaGarde, M. C. U. S. A., Vice-Chairman; and Assistant Surgeon-General W. C. Rucker, U. S. P. H. S., Secretary. The Board was organized and appointed sub-committees on the following subjects: Committee on First Aid Methods; Committee on Packages; Committee on Instruction; and Committee on Equipment.

Purposes of the Board: The purpose of the Board is to standardize First Aid for (a) Peace and (b) War.

The reasons for such standardization are:

1. To secure uniformity of First Aid methods, instruction, packages and equip-

ment throughout the Nation, not only in the workshop, but also in the home.

2. To secure economy in the production of First Aid equipment and supplies.

3. To secure uniform legislation on the part of the states regarding the character of First Aid equipment to be used by railroads and other industrial concerns, particularly those which are affected by the Workmen's Compensation Acts.

4. To reduce the cost of accident and casualty insurance by reason of improvements in the character of First Aid applied.

All of the foregoing benefits are accrued to the Nation in time of peace. Should our country unfortunately become embroiled with another it is believed that the following benefits will result:

1. All men called to the colors will be trained in First Aid according to the same standard.

2. The First Aid equipment, package, etc., which he will there find will be the same as that with which he is familiar in time of peace.

3. This will be particularly important with regard to ambulances and litters.

Perhaps the most important part of the entire program will be the popularization of preventive surgery—that is, the general public will be instructed in those simple measures which the layman may adopt for the prevention of serious surgical conditions, exactly as preventive medicine has taught the general public how to prevent serious medical conditions.

The First Aid Conference Board is now engaged in sending out a series of questions to prominent surgeons all over the country in order to get their opinions on certain mooted points in connection with First Aid. Dr. Rucker, Secretary of the Board, writes that this questionnaire has been most generously received and he expects replies will bring out points with which the Board is relatively unfamiliar. At any rate it will give the Board the advantage of looking at the question from many different angles.

It will be seen from the foregoing that the prominence and ability of the men engaged in this work augurs well for its success, and there is hardly a doubt that a uniform standard will be advised that will receive national recognition and be of much benefit to the entire country.

It is not worth while for me to argue on the benefits of First Aid as it applies either to the railroads, industrial institutions or the people at large even in times of peace. However, if we should be so unfortunate as to become engaged in actual warfare, there would be an imperative demand that we educate the layman in this important work. Having gone a little far afield on this subject as regards the railroads, it may be stated that many of them have gone ahead and put into operation individual systems of their own or one that seemed to them most suitable for their varying needs and conditions. It is not remarkable that the railroads should have been pioneers in this movement, due to their greater liability to accidental injury and in places remote from professional assistance. I have no statistics to show when they started this form of help, but I have abundant evidence of the fact that their efforts have not met with a marked success. The chief obstacles that might be mentioned are, first, the inherent difficulty of carrying out a system of First Aid in the train service or among bodies of men who are constantly being moved from place to place, such as bridge gangs and section men; second, the lack of instruction on the part of the medical staff and consequently insufficient education of the employee; third, the difficulty in keeping First Aid material in good condition due to loss, injury in handling, etc.

These are a few of the reasons given why railway shops and railway trains of our country are not equipped with an adequate First Aid service. It may be true that the railway service offers problems not found in other industrial institutions, although this should not be the case for successful administration in the large railroad shops. The failures may be handed down as a legacy from the older methods when more was attempted than First Aid could really accomplish. The elaborate boxes used by the railroads more than a decade ago, and that are still in use on some roads, were not only expensive but contained relief not only for injury but for sickness as well, and were arranged in such a complicated way that

they required the services of a physician rather than a layman for correct administration. Not only this, but such a combination box could not be handled well and became unfit for service after a small amount of travel and use. The fault, as you can readily see, was not due to First Aid, but to a wrong interpretation of its cardinal principle in attempting to put into the hands of the layman something that he was not educated to handle.

Due to the efforts of our Government institutions and others who have given the matter careful study, we have now more practical ideas of what First Aid really means and can accomplish. We no longer attempt to provide drugs for sick passengers, trainmen and shopmen, but distinctly discourage their administration by non-professional employees. By our present method we only put into the hands of the First Aider material that will protect and prevent contamination of wounds until the doctor can take charge. Admitting only for the sake of argument that his treatment is of no positive value, it will at least be of negative benefit in that it prevents something's being done that may be positively harmful.

For some years the roads with which I am connected have had in operation a system of First Aid that is not perfect but has proven quite beneficial. Each year we correct some of its difficulties and make it a little nearer what we would like to have it. We have done better work in the shops than on trains for the reasons before mentioned. We have a train First Aid box known as Conductor's Accident Case, which contains the material usually found in strictly First Aid packages, viz:

Two Red Cross packets, First Aid for wounds.

One-half dozen 2-inch roller bandages.

Two collapsible tubes 1½ % carbolated vaseline.

One cylinder 1-inch adhesive plaster.

One package absorbent cotton.

One-half dozen safety pins, and

One dozen pledgets sterilized gauze in individual glassine envelopes.

Recently there has been added in an experimental way one-half dozen iodin ampules with attached swabs. There is a great difficulty in handling iodin in any other way in the First Aid box and even this method may prove impractical. The cost of this First Aid package is approximately one dollar. Directions for its use are plainly written on the inside of the cover. The cases are numbered and kept in stock in the superintendents' offices, where the conductors of both passenger and freight trains may easily get them. The superintendent requires a receipt from the conductor for a box bearing a certain number and instructs him to keep it in good condition and return the old in exchange for a new one when the former is exhausted of material or important parts. The superintendents return the old boxes to the general hospital and make requisition for others needed. By far the most important consideration in train First Aid is keeping track of the First Aid package. The Conductor's Accident Cases, besides being kept on passenger and freight trains, are supplied to station agents at remote points, to section gangs, signal gangs and to small shops.

In the large shops First Aid plans differ somewhat, due to whether or not the shop is in proximity to the general or division hospital. In one of the large shops, remote from the general hospital, where approximately five hundred men are employed, an emergency or First Aid building has been established directly on the premises. This is a small one-story building of two rooms supplied with hot and cold sterile water, an instrument sterilizer and a general supply of surgical dressings. This establishment is in charge of a trained nurse. Many injuries of a minor nature are treated here by advanced First Aid methods. The doctor is easy of access and can be gotten on call. He makes a general inspection once a day. This First Aid establishment has been found not only less expensive, but a more practical method of treating injuries than by allowing the employee to waste time and increase the danger of delay by a trip to the doctor for trivial injuries. The First Aid establishment also answers an excellent purpose as a rest station for the seriously injured while awaiting the hospital ambulance.

In the large shops in Houston, employing approximately two thousand men, the

same arrangement would have been made except for the fact that they are located only a few blocks from the general hospital. On this account only strictly First Aid methods are employed, the work being done entirely by employees who have been given the necessary education. The shops, being convenient to the hospital, are visited from time to time by some member of the hospital staff who gives a talk on First Aid accompanied by a practical demonstration on the subject. The men are taught the necessity of going directly to the employee who has been put in charge of the First Aid station for even the slightest injury. These stations are located in the more important buildings and are easy of access.

We have recently made a change in handling the First Aid material, and instead of boxes, a small wall cabinet is found much more satisfactory. A movable receptacle for First Aid material is not suitable for shop First Aid. In a busy shop the wall is the only safe place. The cabinet can be locked if necessary and made dustproof.

The two most important articles of any shop First Aid are a large glass-stoppered bottle of tincture of iodin and a still larger bottle of cotton swabs. Before the days of efficient First Aid, when the men ordered what seemed to them best, requisitions would come in for many kinds of wound remedies and many of them of doubtful value. The importance and value of using only one application for all skin lesions except burns, is apparent. For burns only 1½ % carbolized vaseline in collapsible tubes is used. Better remedies are obtainable, but we have found this the most satisfactory in the hands of the layman.

In eye injuries only floating foreign bodies are removed and the only instrument provided for this purpose is a small pledget of sterile gauze. Practically all eye injuries are sent directly to the oculist and all other injury cases of any consequence to the surgeon after First Aid has been applied.

Instruction is given for controlling hemorrhage and treatment of shock, serious injuries, etc. Without this instruction something is liable to be done, when a man is seriously injured, that will be positively harmful. We impress upon the First Aider that he is in no way to take the place of the surgeon, while at the same time we emphasize the importance of his part of the work.

It would be somewhat tedious to give in detail our plan of First Aid, for in fact it does not differ from the recognized method as adopted generally. It has always occurred to me that the system for carrying out this work was more important than the material used. I am also thoroughly convinced of the fact that the failure of First Aid among the railroads and elsewhere is due to the negligence of some one other than the employee. We are forced to recognize the fact that no new system of education can be taught with an occasional lesson or can be put into operation and expected to run itself without an occasional inspection. We are entirely too prone to ascribe failure to certain unavoidable conditions when the real difficulty was entirely within ourselves. I am firmly convinced that this has been the cause of our past failures and that many of our attempts at First Aid have suffered on this account. It will come after a while, as other reforms have, but possibly not until it has been made compulsory by National or state legislation.

FUNCTIONS OF THE SPLINT IN THE TREATMENT OF FRACTURES OF THE LONG BONES*

By E. B. Claybrook, M.D., F.A.C.S.,
Cumberland, Md.

When we go over the literature of fractures thoughtfully and critically, we are especially impressed with the large number of forms, materials and complicated mechanisms of splints that are recommended; and it is evident that the profession is, and has been, expecting entirely too much of this useful, but much abused, adjunct to the treatment of fractures. And when we look around us, and see the average results that have been turned out,

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and are still being turned out, we can not escape the conviction that such is the truth. There is no doubt in my mind that the profession, in this, as in other matters surgical, has been following blindly a time-honored custom rather than scientific reasoning in the application and the retention of splints on the fractured limb.

There are only three functions that can be safely performed by any splint in the treatment of long bone fractures, and they are: maintenance of alignment, prevention of axial rotation and fixation of adjacent joints. If anything more is expected of the splint, no matter how well it is applied, the result will be complicated in just so much as the expectations are increased. The splint should never be expected to maintain the fractured ends in apposition, except indirectly by meeting the three conditions already mentioned. And it is because of the fact that they have been expected to maintain apposition directly that we have had written into the literature of fractures such conditions as Volkmann's paralysis, pressure necrosis and pressure gangrene. If we are to get a good result in a fracture, it stands to reason that we must get the fractured ends in apposition first, and that after they are in apposition we must assure ourselves that the ends have a tendency to remain in place before any splint is applied.

If the ends do not fit together readily and become slightly impacted so that their serrations keep them from slipping past, after careful manipulation, then we know that a position of stability is impossible because of soft tissues' intervening, or because the fractured ends are so oblique that the serrations will not engage strongly enough to maintain the length of the bone against the muscle pull, and an artificial position of stability must therefore be produced by open direct fixation, by the use of ligatures, screws, plates or inlays, because we know that we can not possibly expect the splint to accomplish what we have been unable to do by manual efforts.

Then again, it seems to me that we have expected too much of the splint in that we have been taught that they should remain in place from six to eight weeks, to maintain apposition until bony union has resulted, and I believe that this very attitude has been responsible at times for delayed union and non-union. I know from personal experience that for an average, three weeks is plenty long enough for fixation to be maintained on the femur and from two to three weeks on the arm and forearm. It is not necessary to wait until bony union has occurred, as the callus will maintain the position of stability safely enough after it has hardened up, and the getting rid of the splints so helps nutrition that bony union is hastened, the term of invalidism is shortened, and the patient's comfort wonderfully increased.

As long ago as 1848, before the days of the X-ray, Humphrey made some very clear and valuable observations upon bone atrophy in which he claimed that bone atrophy was not accompanied by any wasting in size or length, but that the cancelli were absorbed and the bony elements disappeared, making the bone spongy, light and easily broken.

Since the advent of the X-rays this has been noticed in the skiagraphs and the bone of the limb that has been encased in plaster for a long time does not cast half so dense a shadow as the one in the sound leg. This is so noticeable that it has been called by many eminent writers, who should know better, "plaster-of-Paris disease." It is no such thing; it is simply bone atrophy from lack of use, and the same thing can be noted in the limb totally paralyzed from infantile paralysis, or in any bone where there has been no function of the limb for a long time. It was simply more noticeable after plaster than after simple splinting, because plaster is the one fixation material that really fixes, and for permanent, long-time dressings is most used.

Now this condition of absorption of the cancelli and lightening of the bone is scarcely one we want to see developed in a bone that we want to stimulate to union, and yet, whenever we employ prolonged fixation, that is what occurs, to a greater or lesser degree.

I have never been a believer in the method of Lucas Championierre, where there was not a lot of good reason in his arguments and we can all learn a great deal from him. Massage, light and any-

thing that aids in keeping up local nutrition, are wonderful aids in bone formation, and for this reason we should, in my opinion, do away with splints at the earliest possible moment, as soon as the callus, which is Nature's splint, has hardened enough to fulfill its function.

Splints should never be tight, but fairly loose and comfortable. They should always enclose the joints next above and below the fracture, when the shaft of a long bone is involved, and I believe that the sooner after the injury the permanent dressing is applied, the better it is for the patient.

I do not believe that any one can dictate as to splints and splint material. I believe that the individual surgeon should use the one he feels best capable of using, and that he feels best meets his requirements. I do believe, however, that the plaster cast well applied, by one who knows how, meets all the requirements better than any other splint, and has the added advantages of being cheap, easily applied, and when it is once in place it does not slip or become disarranged, and in the case of our foreign friends, is not easily removed except by the initiated. However, in using the plaster cast it must be remembered that like all good things it can do damage, and that its safe and comfortable application is an art in itself and is not to be lightly undertaken by the uninitiated.

61 *Washington Street.*

Editor's Note: The above paper by Dr. Claybrook completes the Symposium on Fractures. The other papers read and published were: "Plaster Technique in Fractures," by Dr. R. W. Knox, Houston, Tex., published January; "Report of Case of Fracture of the Pelvis with Exhibition of Patient," by Dr. D. Z. Dunott, Baltimore, Md., published February; "The Treatment of the More Common Fractures," by Dr. Lucius E. Burch, Nashville, Tenn., published March; "Treatment of Fractures of the Elbow," by Dr. Duncan Eve, Nashville, Tenn., published April; and the "Fractures of the Lower Extremity: Their Treatment," by John C. A. Gerster, New York, published June. The discussion of the Symposium follows.

DISCUSSION

Papers of Drs. Knox, Dunott, Gerster, Burch, Eve and Claybrook.

Dr. Jere L. Crook, Jackson, Tenn.—Because of the potential results to the company, to the patient and to the physician, the subject of fractures will always be a popular and an important one before any body of surgeons.

I am put down on the list to open the discussion on fractures of the elbow joint, and will confine my remarks to that subject. The splendid paper of the essayist is in perfect harmony with the very best of modern thought and technic on this subject. The work of Robert Jones, of Liverpool, and of Ashurst has blazed a new trail of surgical opinion on the treatment of this most important injury.

Elbow fractures largely occur in young children and in youths. Therefore, the question of disability assumes a larger importance than it would in older people, because a deformity begun in early youth means so many more years of suffering than it would occurring in later life.

The reason for so many fractures in children is because the child is so very active in climbing about that he is more apt to have a fall on the elbow joint, which frequently causes a fracture near the condyles. The fractures of older people that occur, largely happen to men, and are caused by gunshot wounds, principally, or by injury from working in machinery. The memorable work of Jones in advocating hyperflexion in the treatment of these fractures has made it much simpler than the different forms of apparatus that we had used before that time.

The essayist has preferred simply the bandage. I stick more closely to the treatment of Jones and use the adhesive plaster, because, in children, especially, it is a more difficult matter to maintain the fractures than in an adult on account of the movements of the child being more difficult to control. In the use of the ordinary bandage there is more danger of its slipping in a child. Hence use your plaster around the wrist and arm reinforced by the bandage tube around the wrist.

These fractures are extremely important, because so often there is deformity, and all of them, with the exception of the ordinary T-fracture and spreading of the condyles, are treated with the hyperflexion method. These, in a child, should be reduced under anesthesia, and it requires mechanical precision and surgical judgment of the highest order.

In reference to the use of early mobility and massage, spoken of in the paper, they harmonize with the very best of modern thought and meet with my hearty approval.

Dr. S. S. Gale, Roanoke, Va.—In regard to the fracture of long bones and the application of the splint to the fracture, I think that the essayist has so fully covered this subject that there is very little left to be said. There are two or three points, however, that I think we ought to emphasize. I don't know that it would apply to this body of distinguished surgeons, but to a great many general practitioners. I believe they use the application of splints, particularly plaster, to cover up their defects, and in the hope of getting results that they have not been able to get by the proper manipulation and apposition of the bones. In other words, they have not gotten the position of stability to begin with. At the same time they have applied some sort of splint. In my opinion that is all wrong, just as Dr. Claybrook has brought out. If you don't get stability or reduce your fracture, what is the use of putting on a

splint? It merely covers up your mistake for the time being? I believe that all of these fractures should be checked up with X-ray pictures before there is any attempt made to reduce the fracture; and then, after the reduction has been made, or we think we have made it, we should take more pictures to check up what we have done.

If we find by the X-ray we have not been able to get stability or reduce the deformity, the thing to decide is what is the next best procedure, which necessarily must be either another attempt at reduction or some open method of treatment. It isn't necessary to go into that here, because that has already been fully discussed.

In the application of the splint I think that it is a very important point that the splint should not be applied too tightly. I believe that nearly any one can put on a splint too tightly and I don't believe that everybody can put on a splint loose enough. In my experience I have found that it is the easiest thing to put the splints on too tightly, and it takes considerable judgment and care to have them loose enough.

There is some difference of opinion as to how these splints should be applied, some preferring to put the plaster next the skin or with a very tight bandage, a cotton or woolen bandage only between skin and the plaster. I have always used rolls of gauze because it allows for the swelling, and in that way you can put your splint on tighter than if you had nothing between your plaster except the thin layer of woolen bandage. But that is a difference of opinion. I do not think the doctor is quite right when he says that the splints ought to be removed within three weeks in fractures of the femur.

I think that in closing the discussion it would be well for Dr. Claybrook to tell us more fully the subsequent treatment. He merely states that he removes the splint and uses passive motion and massage. I would like to hear the details a little more fully.

It seems to me that we can not have hard and fast lines as to the exact time to remove the splints. Of course I believe that everything goes back to the first statement: to get your fracture in position. Probably, if you have absolute position, in three weeks you will have strong enough union to dispense with splints altogether and get the patient up on crutches. I am satisfied it has been the custom in the past to keep splints on entirely too long.

Some years ago, when I was a student and interne in a hospital in New York, we had Dr. Manley there, and he had some very advanced ideas—what we thought very foolish ideas at that time—on the treatment of fractures. He maintained that splints interfered with the circulation and delayed union, and, in a good many cases, prevented union entirely. It was the exception to apply any splints except a pillow to the treatment of his fractures and he began passive motion almost immediately. At that time we thought he was very much in the wrong, but the profession, I believe, is rapidly coming to his way of thinking.

Dr. Denegre Martin, New Orleans, La.—I am not going to attempt to say anything in regard to the treatment of fractures. That is a thing no one can teach you. You must learn by practice and experience—and an experience that is sometimes sad. It is purely a mechanical art. Get your ideas and go home and practice, but I want to say a word in regard to the proper fixation.

The treatment of fractures means simply reduction and fixation. The reduction is sometimes easy, but the fixation is faulty. Many make the mistake of not fitting the fracture to the splint. In other words, the splint is too short, and you are adding insult to injury.

Dr. Knox is to be congratulated and thanked for introducing the subject of plaster-of-Paris. That went into disuse when we used the plaster bandage or cast. Because we had some one making traction, we applied the bandage over a lot of cotton or wool; it was badly applied, set badly, and inside of a week the leg shrunk and the fracture, instead of being held by the splint, the splint was simply held by the fracture. The splint was put between two sand bags and the patient went wiggling around, suffering pain, the swelling was kept up, and there was a bad result.

But the plaster splint is a different proposition. You can well understand that no shoes will fit two feet, nor will any one splint fit two legs; therefore, the commercial splint is a mistake. But with the plaster properly applied and properly moulded, you need no padding, but you get a smooth, well-fitting splint, adaptable to any leg and any condition, and which can be made strong enough to overcome anything. Make the splint, apply it to the leg, and reinforce that, if you wish, with a plaster bandage. If you want good results, suspend all of your fractures sufficiently high on the principle of the Hodgins splint—the best ever used for general purposes. Then your patients can get up or sit down and old people will not be in danger of pneumonia. You will find comfort and good results.

Go back to the plaster and learn how to use it. Not when your patients come to you, but go home and start now on an artificial leg. That is the way I used to teach, and it is good practice.

Dr. W. W. Harper, Selma, Ala.—In the treatment of fractures, there are a few points that I would like to bring out in the discussion. Recently, there came under my care a woman who had been run over by a wagon. The arm was fractured where the musculo-spiral nerve winds around the humerus, and following the injury there was a wrist-drop. In a short time the paralysis passed off. After such injuries, if you do not take care of the wrist-drop until the nerve function is restored, the patient recovers from his fracture with a more or less permanent wrist-drop as a result of the unopposed contraction of the flexor muscles. Therefore, in fractures of the forearm with wrist-drop, the forearm should be splinted with the hand in full dorso-extension. The same treatment should apply to sprains of the wrist, for, as Mr. Jones, of Liverpool, has shown, most of these sprains of the wrist are accompanied by fracture of one of the carpal bones, and if the wrist is splinted in flexion and ankylosis should occur between the carpal bones, the patient remains with a permanently weak hand. Mr. Jones has been mentioned as "the father of elbow fractures." He does not use passive motion.

Ten days after the fracture is put up in acute flexion he drops the forearm ten degrees. Then the patient is told to bring the arm back to the former position. If he can do that without pain, the arm is left in that ten-degree-drop position. If it gives the patient pain, the arm is kept five days more in its original position. Every five days he drops the arm ten degrees and allows the patient to work the arm in that circle. In the last ten degrees, he either turns the patient loose, tells him to use the arm, assuring him that in two months' time he will have a completely extended arm, or he gives him an anesthetic and breaks up the remaining adhesions.

The following is Mr. Jones' method of reducing a Colles' fracture. By this method he claims that a four-month unreduced fracture can be effectually reduced. The ball of one hand of the surgeon rests under the proximal end of the fracture, while the ball of the other hand rests upon the distal end of fracture. While the under hand supports the proximal fragment, the upper hand presses downward and rotates inward into proper place the distant fragment. The hand and forearm are put up in flexion. A general anesthetic is necessary.

In treating a Potts' fracture, one must remember that there is not only an inward bow of the fractured fibula, but that the internal malleolus tip is broken off and frequently wedged between the articulating surfaces of the astragulus and the tibia. If the fracture is put up in the usual way, the patient recovers with an impaired ankle function. The proper treatment is first actually to dorso-flex the foot which squeezes the broken tip of the malleolus from between the astragulus and tibia. Now strongly invert the foot; this takes the bow out of the fibula.

All fractures between the elbow and wrist should be "put up in full supination, as the shoulder joint will enable the patient to pronate the forearm should ankylosis occur between the radius and ulna."

Dr. R. M. Harbin, Rome, Ga.—This ground has been pretty well covered by the discussion, but there are two points I would like to emphasize. One is the importance of adjustment of bones under the fluoroscope. This gives absolute dependence in knowing when you have approximated the bones.

Another point in post-operative treatment: After all these manipulations there is a good deal of edema that gives the patient great discomfort, which can be materially mitigated by a liberal dose of Epsom salts.

Dr. R. B. James, Danville, Va.—I wish to call your attention to a simple method of setting the thigh of a child under three or four years of age. It consists of a triangular splint, each side of which is as long as the distance from the groin to the patella, the thigh being flexed upon the abdomen. The splint being well padded, one side is fastened to the body of the child by adhesive strips passing around the child. This side of the splint is wider than the other two sides. The angle of the splint being doubly padded is placed in the angle of the groin and the broken thigh is put in position and fastened to the side of the splint with adhesive. Then after perfect alignment is secured, the thigh and body are securely fastened to the splint with a roller bandage. There is but little extension needed on a child so young, and this splint has proven perfectly satisfactory in that respect. This splint permits the child's being easily cleansed and moved about, held in the mother's lap, and in a few days sit in a chair with perfect comfort and impunity. Properly applied, this little apparatus gives an ideal method of treating such fractures.

Dr. S. R. Miller, Knoxville, Tenn.—I hesitate to get up after the distinguished speaker, but I do not think we should go out of here thinking that all seriously injured fingers should be cut off or that plaster-of-Paris is not worth anything, except for birds' nests.

First, about the fractured phalanges: If you treat those fractures in the flexed position, put a bandage, or large soft wad, in the hand and bandage that to those fingers snugly, but not too tightly, you will usually get a good result, provided there is no serious infection from the compound wound. I more frequently use the small metal splints and you can thereby get some extension. You can fit those splints to the contour of the hand and you can use them any length you like. He is right if you treat those fractures in the extended position, as the text-books teach, but flex them and you almost invariably get a good result, thumb and all.

In reference to the plaster-ofParis and Hodgins splint, I think Hodgins' splint is best for the fractured hip; but for fracture in the upper portion of the femur, or in the middle third of the femur, it will not serve satisfactorily, and you will certainly have a damage suit on your hands if you treat the lower fourth of the femur with a Hodgins' splint. We are up against a difficult proposition in these fractures, and we had just as well get down to a careful standardization of their treatment.

Suppose you can build a bird's nest in that fracture cast? We have all heard here this afternoon about "the good set, and that all you have to do is to maintain your position." You put the cast on merely to retain the alignment. If your fractured femur is lying in a trough, and you have a good set, why do you need it so very tight? In a few days you have the exudate and all you have to do is to keep it in general position. The patient may be like some of those stubborn cases that persist in sitting up at night, when no one is looking, or turning on the side. If you have your set you can get it well fixed at the knee and your cast put on up to the lower part of the thorax, then if he turns over you have still got your extension there with the case and you have a good alignment and fair fixation.

I want to take issue with Dr. Burch on one point: I gather the idea that a Colles fracture should be set under a general anesthetic. I think that the average Colles fracture is the one fracture that can be satisfactorily set without an anesthetic. We do have many of those atypical cases, and I hope the doctor, in closing his discussion, will tell us the danger of treating those atypical Colles fractures with nothing but position, or nothing but a sling—because that is dangerous treatment.

Dr. R. M. Cunningham, Birmingham, Ala.—A very minor fracture, but nevertheless a very important one, is a fracture of the phalanges. In the first place, the phalanges are short in length, but are long in anatomical definition and that makes them inherently a very difficult proposition. I think Scudder's work on "Fractures of the Phalanges" is the best thing on the treatment of fractures that has been published in the past several years.

In iron and steel mills you have many fractures, due to direct violence, of fingers and toes. We can dismiss the toes, all but the big one. The others have corns and the X-ray damage suit may well discover it, so no particular treatment is applied except to the big toe, and that can be readily covered in plaster-of-Paris.

But as to these fingers: in simple fractures you will do pretty well, but these fractures, as a rule, are compound, and often the extensor leaders and the flexor leaders are torn. I have never been able to get union of one of those leaders, and I have tried everything. The point is this: with an extensive trauma of the fingers, particularly with the second and the third, with the leaders torn and often shortened, amputate. Under aseptic surgery you can always get a good result, but you have got this and that to follow, and it is a lot better to cut it off; and then the corporation will settle it. But if you get bad results the doctor may often have to settle it. I have tried that.

As to the first phalanx of the thumb: say your prayers, gentlemen, that you will never have one in the world. I have had three. Got a bad result in all, and a damage suit for $2,000 in one. They don't often occur. These muscles here, bring down the proximal end of this bone and this of the second phalanx, and they go right down and you can not keep them in place. There is only one way to treat them: by operation. Open it up, wire it, or use chromacized catgut. You can not do it, gentlemen. I can't. I have had three, and in every one this second phalanx insisted upon coming back on top of this one. In one we made a secondary operation and got a good result and avoided two damage suits — one against the company and one against me.

In regard to the X-ray: it is absolutely necessary to get along in the treatment of fractures without it, particularly if any lawyers are about. You first want to take one before you dress it, and should keep that, certainly; and then one after you have dressed it, to show the work you did. Then if you don't get results you can show that you put it together and it didn't stay.

I have always found, gentlemen, it is easy to satisfy a jury with an ununited fracture. You attribute it to syphilis and anemia, but a badly adjusted fracture is chargeable to the doctor. An X-ray will tell stories. I have had them tell them on me! And sometimes it tells the truth. But regarding the fractures of the phalanges, you have treated many a one and you didn't know it. You take a working man after forty years of age and you will get crepitus in every one of those joints. And you take the foreign element; in the great majority of them a fracture will do them good. You will see it advertised in the newspapers, "A Cure for Rheumatism," with the bones all piled up.

I want to call your attention to the fracture of the head of the first metatarsal of the foot. Gentlemen, save that if you possibly can, no matter how bad the trauma. There is no use having infection now, you know. That is chargeable to the doctor. An X-ray will tell stories, but you can clean these wounds. If you haven't time, you can use iodin; but I resort to scraping. Save it if you can. If you can not, take out the head of the bone and let the structure come along and the end will not show up any displacement. I have tried that both ways.

In regard to the Hodgin splint: That is the thing to do above the knee. I have used plaster for twenty years and I have got some good results. You see them coming down the street. It looks like they were born with one leg short. I have one, a friend of thirty-five years, and he always walks up and tells me how he is getting on.

A friend told me about the Hodgin splint. I never saw but one man that could wear that, and he stayed drunk nearly all the time. If you will watch that plaster-of-Paris you have got on the thigh, the birds will lay eggs in them in three weeks. You have room in them for hiding a cat.

Now, the thing is the treatment, and that right at the knee. About keeping them in by pressure in an oblique fracture, the thing will slough off. Pressure sufficient to keep in position a long bone will surely cause sloughing. You have got to rely upon extension there. Plaster-of-Paris is the ideal treatment, in my opinion, from the knee to the toes.

In Potts' fractures, what is there to displace the internal malleolus? There is nothing to pull it out, and you can disregard the fibula except in the X-ray. You don't need it, anyway. You need the malleolus, but not the shaft. And I can't feel that margin enough to tell, either. The X-ray shows it.

When you take an X-ray, take it laterally, and up and down, if you can, every way you can. And if you haven't it in position, be skillful enough to change the angle of the X-ray so as to put it in position. You know you can have a fracture of the tibia that you can not tell clinically. I have one that I worked upon several days, but he said that that liniment didn't do any good; so I took a picture. It was a transverse fracture and I got a perfect result in that. We get fine functional results. That leads me to say, gentlemen, that one of my medical brethren was in a bad plight, as there were five or six fractures around him, and I testified that we could get a good surgical result with both a bad automical and functional result. We could get a good functional result with a bad anatomical result,—and that saved him. Nothing else did, because the X-ray showed up like a wagon had been mired up.

I want to report a case that I hope none of you ever had, and if it had not been for an X-ray I would not have known I had it. A Negro went to sleep under a freight car and another Negro started the car with a pin apparatus,

and it just gradually hit him. When they brought him to the hospital the right humerus was dislocated and also the left. In the first place, the left was about six inches shorter, so I counted about three inches on each side. I anesthetized him and I put that back, but it didn't stay. Well, I heard some of the grit. Said I, "there is something broken." I had not been using an X-ray long. So I sent for an expert in town to come out and take an X-ray. We had a comminuted fracture of both astraguluses, a fracture of the body of the right pubic and of the ramus. Any way, it was that bone. Well, sir, we could only keep him in there while he was under chloroform. But it was too expensive. Now, a plaster-of-Paris there would have been absurd. I put him in a double Hodgins, i. e., on both sides, and raised the foot of the bed about eighteen inches. If I didn't, he would have fallen right over. Fortunately the next day it began to swell up as big as a barrel, with retention of urine, and I thanked the Lord he was going to die. But he didn't die. A dose of salts and high enemas cured him. I still don't know what was the matter. So I hung him up, and every morning I would go up to see him. He would be all twisted up again and I had to give him chloroform and pull him out. I thought of opening the joint, but he surely would have died, so I didn't do it. He finally got well. At least he didn't die. He is going around with one toe pointing out that way and the other one that way, and he is paralyzed in the extensor muscles of the foot. The nerve was caught and in the manipulations that I made I think I burst part of it. So that man goes around town now fiddling and telling that Dr. Cunningham treated him when he got hurt.

I never in my life before had a fracture of the os innominatum that didn't die, usually from a puncture of the urethra or the bladder. We had one case we operated upon and found part of the os innominatum in the bladder, and he didn't die. What would you have done? I showed it to our Society, and it was the worst case we ever had. I don't know how you get that bone back. Dr. Wise says, gentlemen, it will pay any of you to go to New York to learn that, if you have not learned it. It isn't stuck in the bone. When you pull this way—but do as Dr. Burke did, back this way; put the thumb here on the upper end of the lower fragment and push like the mischief, and pull like two mischiefs, and you can send him to work.

It makes no difference what you put on, but don't put on a plaster-of-Paris. When I returned to New York two of my sisters had a boy on the table and it was like discovering a gold mine. My younger sister said, "How did you do that?" And from that time to this I have had results in Colles' fractures that are admirable anatomically and X-ray proof,—and that is all we can ask.

Now, gentlemen, I have talked too long, but I have had a wonderful experience of about 1,500 fractures. I hope I shall never have another. Remember the Hodgins' splint is safe, clean, and you can brag about it. You know, gentlemen, I never treated a fracture in which I could get the fractured leg quite so long as the other. One case in which I used the Hodgins' splint I got it three-quarters of an inch too long, so I resorted to this: An examination of about three thousand skeletons showed that. In my particular case I had the misfortune to have the wrong leg broken.

Dr. S. E. Millikin, Dallas, Tex.—I certainly enjoyed Dr. Cunningham's reminiscences of his fracture treatment. It reminded me of when I left the hospital and asked Dr. Bull what I should charge for a fracture. He said: "Charge all you can get; the difference of one personal injury you get as a doctor will eat up all your profits."

I regret that I did not hear Dr. Knox's paper, but I have had some experience with the fracture of the neck of the femur. I think the greatest difficulty is in the treatment of the patient. I treat the fracture of the neck in the aged exclusively with plaster-of-Paris, put on under an anesthetic, and give the thigh the greatest possible abduction, almost as much as Loranz would in his hip-joint congenital reduction. I put the patient to bed, with the idea that they can be rolled from side to side, changing their position.

I regret that I did not hear the original paper, but I judge that there has been some treatment of the femur. I thoroughly agree with Dr. Cunningham that the X-ray should be taken fore and aft and every other way. I treat no case that I do not have X-rayed, if possible before, and certainly always afterward.

I think the femur is the bone in which we get the greatest results, i. e., in the shaft, without involvement of the neck. But I do not use the circular bandage on the femur. I use my multiple moulded splints, and in that way alone can you get a readjustment after the swelling has subsided.

I think the femur is the ideal place for the bone plate, and after I have failed to get proper position after an anesthetic reduction, I don't waste any time; I plate my cases.

Dr. R. W. Knox, Houston, Tex. (closing).—The discussion of fractures has taken such a wide range that it is difficult to take up all points made in the limited time allowed for discussion. Fractures of the femur, especially the upper portion, are the most difficult forms of fractures we have to handle and the results are more often unsatisfactory. The long splint with a pulley does not correct the displacement in subtrochanteric fracture. In my opinion plaster-of-Paris properly used will most nearly answer the indications. Both thighs at an equal angle of abduction should be placed in solid plaster casts and they should include the entire pelvis. Unless the sound limb is also held in abduction it is difficult to prevent angulation at the seat of fracture. It is best to tie the muscles by weight and pulley for at least one week before applying the permanent cast dressing. In some cases where the patient is very muscular and apposition difficult it is better to use the Lane bone plate in connection with the cast. The results in the case of fractured pelvis mentioned by Dr. Cunningham were interesting. I have found accurate replacement difficult in such cases and

have had to rely upon the immobility obtained with the pelvic cast.

In fractures of the elbow joint which have been so ably described by Dr. Eves I have also obtained fairly good results by placing the arm in extreme flexion and fixing it in this position with a plaster splint on the outside of the arm, extending from the shoulder to the hand and with an additional circular plaster bandage carried around the elbow angle. With this style of splint only the posterior and sides of the forearm are covered with plaster. It has the advantage of quick removal and replacement when massage and flexion become necessary. I agree with Dr. Eve in beginning early motion in these cases.

As the question of fractures in general has been mentioned in this discussion, I would like to say a word in connection with injuries to the carpus. These cases, on account of the slight deformity resulting, are often treated as a sprained wrist or possible Colles' fracture when, in reality, one or more of the wrist bones, usually either the scaphoid or semilunar, is dislocated or broken. I overlooked the real trouble in one of my early cases and as a result was caused considerable embarrassment. In all suspicious cases I now take an antero-posterior as well as lateral X-ray view of the wrist and am able to discover in this way any fracture or displacement that may exist. I have recently operated upon two cases of wrist injury, one a fracture-dislocation of the scaphoid and dislocation of the semilunar, and the other a dislocation of both these bones in opposite directions. Replacement was impossible and in both cases the bones were removed. These men, who earn their living by the use of their hands, have returned to work with no disability whatever. I am firmly convinced that there would have been permanent disability in both cases without operation.

Dr. Jno. C. A. Gerster, New York (closing)—It was worth the twenty-four hour journey from New York to hear Dr. Cunningham, and I beg him to accept my personal thanks for his talk.

I omitted to mention fractures of the neck of the femur — not through the trochanters, but through the actual neck—the so-called intracapsular type. For these Whitman's abduction is surely the best routine method. While I do not advocate nail extension as a routine treatment for this condition, I wish to quote from a letter of Dr. John Boyd, of Jacksonville, Fla., describing the case of an old lady of 73 who had a nail extension for 5 weeks. Dr. Boyd reported that he obtained a good result and said "the old lady was the most comfortable bed patient I have attended for many a day."

Non-unions of the neck of the femur (as well as non-unions in general) are best treated by bone grafting. In the majority of instances this is successful. However, they require long and persistent after-care. I know of five instances of fracture of the graft, one in Boston three months after operation, some of the others as late as five months—all from the practices of leaders in bone surgery.

Supracondylar fractures of the femur (including traumatic separation of the lower epiphysis) are best reduced by acute flexion combined with suitable manipulation. They are directly analogous to fractures of the lower end of the humerus which are usually amenable to the acute flexion. Exceptionally nail extension (through the head of the tibia) may be required to effect reduction in fractures of several days' standing.

May I ask Dr. Claybrook whether he makes it a practice to remove all splints after three weeks in fractures of the femur? I should be afraid of angulation. Dr. Estes, of South Bethlehem, Pa., has told me that he observed angulation in a Lane-plated case five months after union had been established.

That limbs of normal adults may differ as much as three-fourths of an inch is a well-known fact. In one of my cases, the longer limb was fractured and measurement showed no shortening, although the X-ray demonstrated considerable overlapping. To effect reduction it was necessary to make the fractured leg longer than its fellow.

Dr. Knox has spoken of suspension. I have been using free overhead suspension for the past three years in all fractures of the lower extremity. It makes for increased efficiency of traction and for greater comfort to the patient. The recent articles of Dr. Flint, of New Haven, Conn., in the *Annals of Surgery* and elsewhere give a clear idea of how vital this principle is for the proper treatment of most fractures of the extremities.

Lastly, it may be of interest to mention a method of measuring limbs supposing the hip joint of one side is fixed in either adduction or abduction. It was brought out many years ago by my father, Dr. A. G. Gerster. In abduction it is a simple matter to mark the anterior spines, bring them level, and to abduct the sound limb so as to form an angle equal to that made by the diseased side with an imaginary line drawn through the body sagittally (this line naturally bisecting at right angles that joining the two anterior spines.) The lower limbs being thus equally abducted, it is a simple matter to determine shortening. In adduction, the reverse process is instituted—*the limbs are crossed, i. e., symmetrically adducted*, before measurement is made.

Dr. Lucius E. Burch, Nashville, Tenn. (closing).—Dr. Gerster emphasized this morning the importance of the early reduction of fractures This is a point to be remembered. There is no doubt about it that the earlier a fracture is reduced after the receipt of the injury, the better will be the outlook, and the sooner the patient will get the use of the affected member. It has also been emphasized again and again today the importance of a thorough reduction of the fracture. Never depend upon a splint or a mechanical appliance to make the reduction.

Governor Cunningham brought out a point that is certainly of great value, if an X-ray picture is brought before a jury, and that is, if you can not get the fragments in perfect apposition, turn the angle of your X-ray so that they will appear to be in perfect alignment.

I do want to emphasize again the importance of a Hodgins splint in the treatment of fractures of the femur. This splint, as Dr. Miller brought

out in his discussion, is applicable to all fractures of the femur, except in the lower fourth. The advantages of the splint are as follows: It is easy to put on, the patient is quite comfortable and easily kept clean, constant traction is maintained, no anesthetic nor bandages are necessary, and the patient can move about in bed, the leg being under constant observation.

Dr. Eve, in his excellent paper, showed us the advantage of the acutely flexed position in the treatment of fractures at the elbow. The advantage of the moulded plaster-of-Paris splint has been spoken of time and again. This splint is easily made up for any fracture and is applicable to a wide variety of cases.

Dr. Duncan Eve, Nashville, Tenn. (closing).—We assume that the hyperflexed with supinated position of the forearm reduces completely most of the fractures of the elbow. When the swelling is too great, it is first important to place the member in a semi-flexed position upon a pillow and apply Gerster's plan of a rubber bandage with an ice bag over it to overcome the swelling. This can usually be done in two or three days and the patient should be given an anesthetic before the forearm is placed in acute flexion. No splints are required, but simply the bandage as directed in its application, which also is made to act as a sling. The weight of the arm and forearm serves for extension.

The use of immobilization by splints prevents the early use of massage and passive movements. Therefore, the plan suggested by Dr. Knox would be contraindicated except, perhaps, in an inter-condylar fracture of the joint. In such cases and even in some internal-condylar fractures, we are in the habit of using adhesive strips like those employed in a Giboney dressing to a sprained ankle, which can be removed after a week or such a matter to begin massage and passive movement.

We hesitated for some time to do away with the anterior angular splint and other means of immobilization until the experience of good surgeons in the use of the Jones or Ashurst position of hyperflexion caused us to give this plan a trial in a sufficient number of cases, until now we are convinced from our own experience that hyperflexion with massage and early passive movement gives a better anatomical as well as functional results than any other method of treatment.

A word or two in regard to the method of reduction of Colles' fracture. Jones, of Liverpool, employes extension as is also used in the Murphy plan. Dr. Cunningham stated very properly that some gentlemen in New York claimed that a portion of the dorsal periosteum in this fracture was untorn and this untorn portion acted as a binding band to hold the fragments in deformity. This suggestion of Dr. Pilcher, of New York, mentioned by Dr. Cunningham makes us believe the Levis' formula is the easiest and best method of reduction, which proposes first to make hyperextension to unlock the fragments and relax the untorn portion of the dorsal periosteum; second, longitudinal traction to separate the fragments; and lastly, forced flexion to force them into position. This plan followed will reduce a larger number of Colles' fractures, in our opinion, than all other methods combined.

We are not very partial to any particular splint—perhaps we use the Bond splint oftener than any other, but frequently find a straight board does as well as anything else. Sometimes in transverse fractures without much deformity, no splint at all is needed. The important matter to be understood is not to immobilize too long and to begin massage and passive movements early. But upon this subject the last word has by no means been spoken.

Dr. E. B. Claybrook, Cumberland, Md. (closing).—The doctor asked the question in the Davis case as to what should be done. I have felt that the only thing the surgeon can do is to put it absolutely up to the patient, being perfectly honest with him, telling him exactly what he has got to look forward to in the way of result, and the risk of operation as to mortality and things of that kind. The patient is the one most interested, and by all means should decide whether we are to go any further.

The doctor also said something about the padding of plaster casts. I was taught to pad them. I now never put anything under them but a plain piece of muslin or canton flannel. If we will put it on immediately, before swelling has occurred, and put on the dressing in the uniform way, the dressing will support the parts and there will never be much swelling. That has been my experience.

A great many people have condemned the circular plaster bandage. I use it right along and have not seen any ill-effect from it, but if you put it on before swelling has occurrd, the parts do not "shrink enough for the cats to sleep in them."

Then, as to taking it off: Dr. Gale wanted to know what I did about that. I take it off of the thigh in three weeks, as a rule, but do not take the patient out of bed for another week. Let him sit up and keep in bed. Let him be as comfortable as possible and in another week let him walk around on his crutches. Moderate use helps the part.

Of course there is no routine for the treatment of fractures. We have to use the law of general averages, and we have to consider the patient.

I believe late angulation is more apt to occur if we take off the splint late than early, because where you prolong fixation, you get atrophy of the bone, and in a poorly-nourished patient they are more apt to become angulated.

In the case Dr. Gerster cited it had been several weeks and the weights reduced an overlapping of three inches. I have had them at eight or nine weeks, under-nourished, and I had to drive a chisel between the ends three times before I could move it, even after I opened it.

Dr. Cunningham, in his argument about the phalanx, says there is no use to try to do anything with the metacarpal bone of the thumb, because it will not stay "put." You have one of three things, as a rule: Too much obliquity, soft parts intervening, or the action of muscles in such a way that you can not combat them; and then you have to produce a position of stability by direct fixation if you are to get a good result. The position of stability is the keynote as to whether or not we must operate.

EYE, EAR, NOSE AND THROAT

THE SIMPLE ENUCLEATION AND EVISCERATION OF THE EYE-BALL ARE UNSURGICAL TECHNICS*

By T. J. Dimitry, M.D.,
Professor of Ophthalmology, New Orleans Post-Graduate School of Medicine,
New Orleans, La.

Are we quite satisfied cosmetically with the results obtained after the enucleation of the eye? Is the technic of enucleation correct to obtain the best results? Numerous questions that may show at least a degree of dissatisfaction with this surgical principle may be asked, but it is not the wish of the writer to offer objections to the old-accepted principle without submitting a technic for your discussion and consideration. The desire is to suggest a correct principle, and to submit this substitute for the enucleation and evisceration which replaces objectionable features of both. The study of the literature on enucleation operations shows a dissatisfaction with a surgical principle, and proves that the surgeon aspires to an ideal. The many repeated queries as to why the artificial shell appears so unnatural justifies the ambition for improvement. The patient, the observing practitioner and the surgeon are not contented with the results cosmetically obtained. My apology in suggesting any change or substitute is well expressed by the editor in the Encyclopedia of Ophthalmology, Vol. VI., page 4396, in the article headed, "Choice of Method in Eyeball Excision." In speaking of enucleation, he says: "In the majority of cases this mutilating and deforming operation is entirely unnecessary and should be relegated to obscurity, that it may make way for better, more modern and more human surgical procedure."

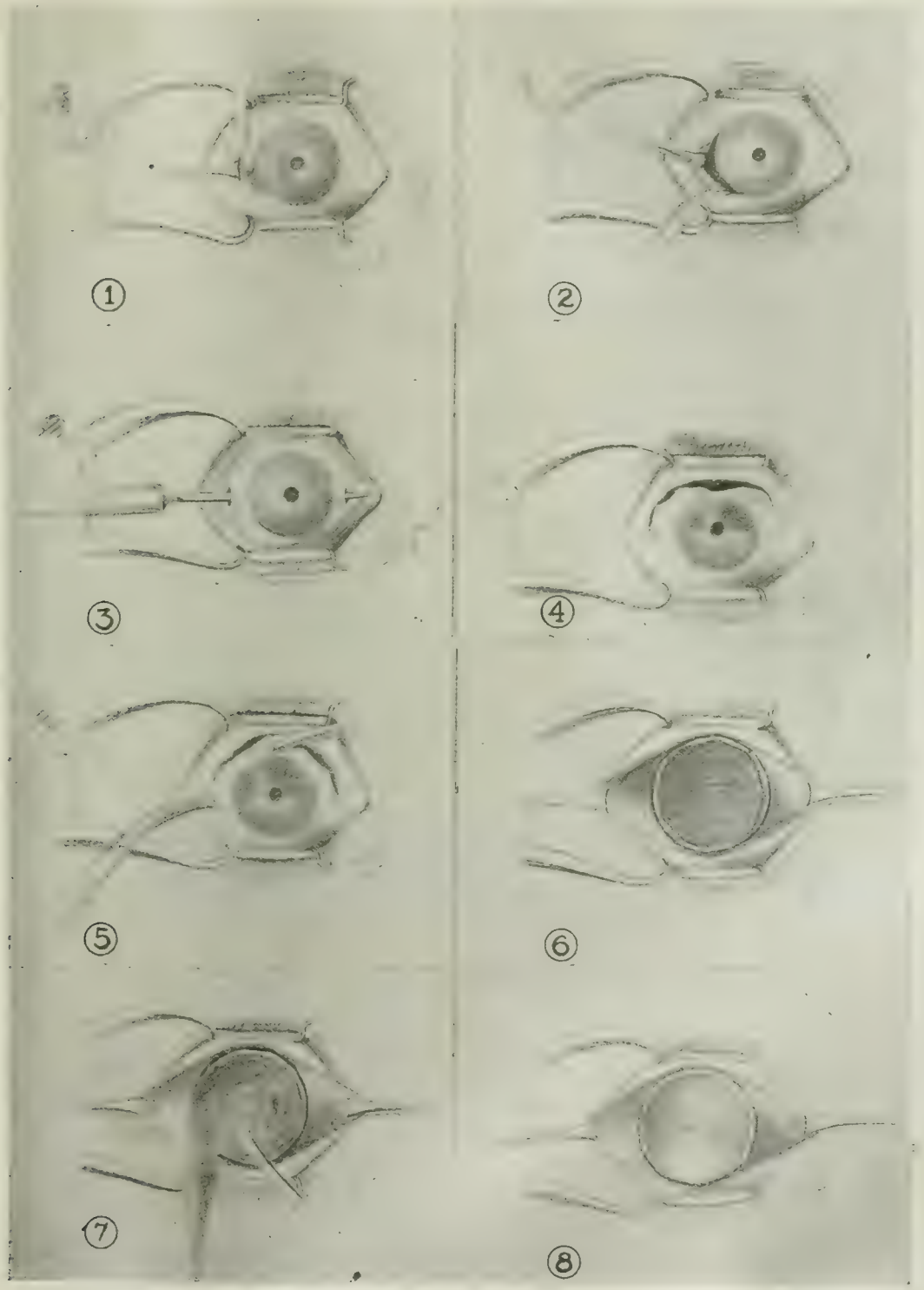
The Vienna, Farrell, Agnew and Alt methods of enucleation is to remove the eye after the conjunctiva, the six muscles and optic nerve are cut. When this is accomplished according to Beard, in his Ophthalmic Surgery, "The hemorrhage is checked and the opening in the conjunctiva is neatly drawn shut—not sutured—and any extruding shreds from the tissues are cut off." The above is the accepted operative teachings of many of our text-books and others suggest a slight improvement over these suggested technics, and again a smaller number aim to a greater improvement. Theobald, in his text-book, 1907 edition, page 273, says: "It is the practice of some surgeons after the eye is removed to bring together the edges of the conjunctival wound by means of a continuous suture, and others, more reprehensible still, pack the orbit with sterile gauze." He says that both of these methods are as uncalled for as they are objectionable; and the same criticism applies because of the unnecessary traumatism involved, to the "finicky" procedure, supposed to increase the mobility of the "stump" of Suker, Schmidt, Prestly Smith and others.

In Meller's "Ophthalmic Surgery," 2nd edition, page 126, headed *Closing of Conjunctival Wound*, is the following: "The wound of the conjunctiva may be closed either with a purse-string suture or with several vertical sutures. If the latter are employed it is important to draw both threads together near the border of the wound, so that no shortening of the conjunctiva may be produced by the central margin of the conjunctiva projecting inward in the form of a roll."

Meller also states that many operators believe that a more movable stump for the prothesis is secured by suturing the four straight muscles to the conjunctiva and by bringing the edges of the wound in the conjunctiva together with interrupted silk sutures. He has not followed this plan of suturing the muscles and believes that it is not necessary to close the conjunctiva with sutures, as the membrane will of itself assume the best and most suitable position and the wound will heal in a few days.

Torak and Grout's text-book, page 436,

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.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has the following: "Suturing of the conjunctiva may be done, but it is not absolutely necessary."

Swanzy and Werner's text-book, page 206, states that "Sutures are not necessary."

Dr. H. Dickson Bruns, the Nestor ophthalmologist of the South, teaches that it is faulty to suture the conjunctiva, for by so doing the secretions are held back, and rapid healing is interfered with.

The adherence to the above-quoted principles were especially noted on a visit to different large clinics throughout the country and with few exceptions the simple enucleation was the operation of preference.

At variance with the above teachings, Ball, in his text-book, page 608, says: "The author favors the use of the purse-string suture."

Weeks' text-book says: "The conjunctiva may be closely approximated by suture of catgut and a compress bandage applied. Other methods of enucleating the eyeball have been described, but none is superior to the one given."

Hansell and Sweet, in their text-book, page 290, edition 1903, state: "The operation is now modified by the suturing of the tendons with the object of securing a more movable stump for the artificial shell." Page 283 has the following: "Modifications of enucleation of Bonnet operation in the ordinary enucelation is advisable in all cases in which an artificial eye is worn. The prominent and movable stump obtained is well adapted to the reform eye of Snellen."

DeSchweinitz, 8th edition, page 6367, says: "The edges of the conjunctiva are united with interrupted sutures, which are generally placed in a horizontal direction, which also include the capsule of Tenon. The effect of the operation, whereby each rectus tendon is advanced to the margin of the conjunctiva and prevented from retracting, is to give a movement to the conjunctival bed much greater than that which is secured after the ordinary enucleation."

Allport, who edits a section in the Encyclopedia of Ophthalmology, a compilation of opinions, gives an excellent suggested technic of his own with the deduction that care for the stump is necessary for a modern operation.

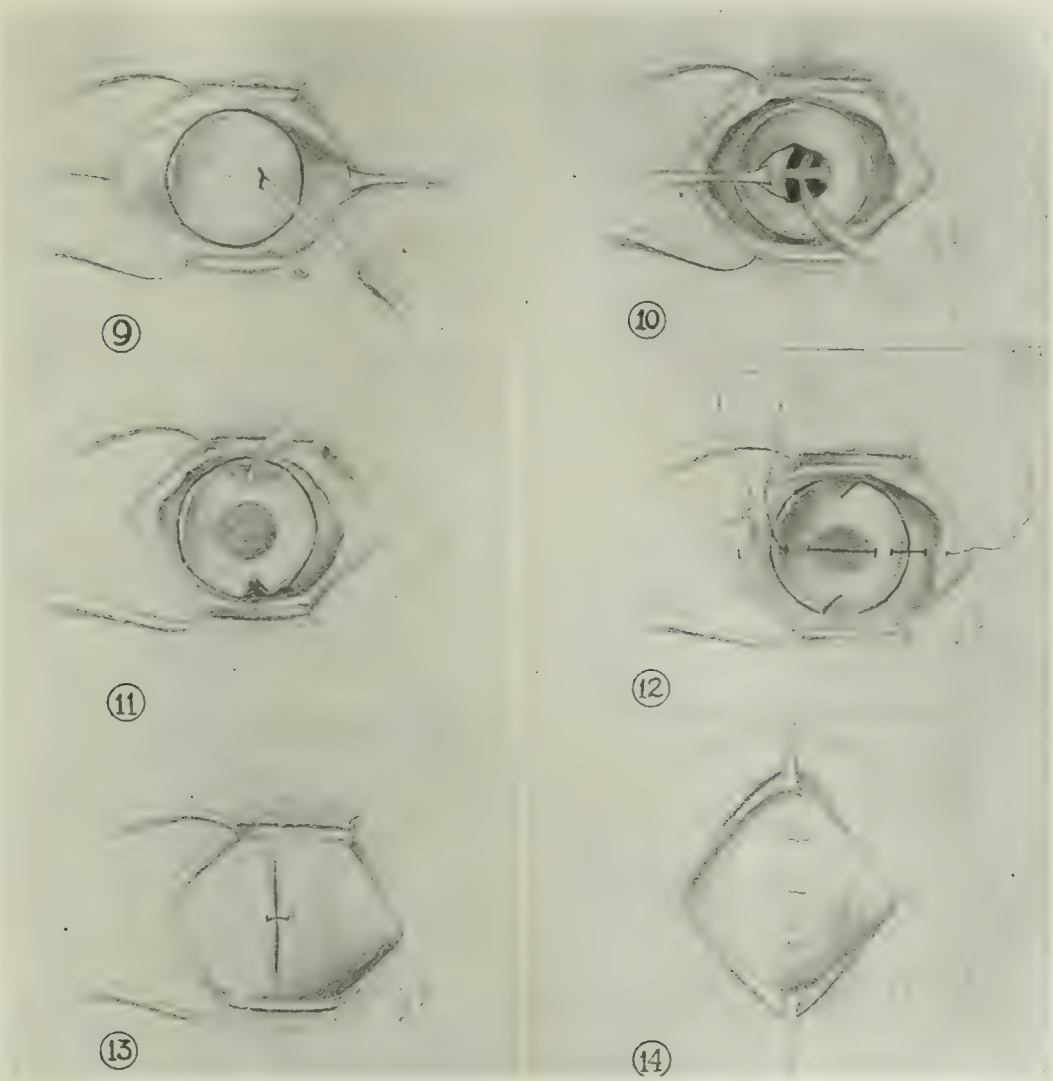
In citing these different text-book teachings the novice is left with an uncertainty as to the selection of a technic and whether he should continue with the Bonnett or Vienna operation; or should he aim for an operation ascribed as "finicky" by Theobald.

The writer charges that the exsection of the eye destroys all visual power and at best leaves the patient with a noticeable deformity, and it behooves the operator to practice all reasonable surgical principles to obtain for the patient the best cosmetic results procurable with safety. Furthermore, any technic which ignores severed muscles, capsule and conjunctiva and permits these severed parts to fall into practically any position, is unsurgical, just as you may cut off a leg, stop hemorrhage, and make no further attempt to procure an acceptable stump. It must be borne in mind that in enucleation severed muscles are opposite one another and are easily brought together. Hence they should not be ignored when it is, as deSchweinitz says, "to give a movement to the conjunctival bed very much greater than that which is secured after the ordinary operation." It is granted that the simple enucleation is superior in relieving the body of an offending organ, but it is unnecessary when better methods may be adopted.

"The cutting out of the eyeball, together with the neighboring soft parts, in a not very different way from that in which a butcher is accustomed to do it, also relieves rapidly and safely the body of an offending organ. Yet this does not justify its continuance and offer any reason for ignoring the improved cosmetic effect obtained when a careful toilet is carried out."

Bowman, Allport, deWecker, Snell, Ernest Clarke, Suker, A. Schmidt, deSchweinitz, Hansell and Sweet have provided for the care of these cut muscles and each aims to use severed muscles to procure the best and most movable stump.

In this contribution the writer desires to avoid any discussion as to when and when not to enucleate, for this question is disputed and is far from a settlement. The operation here advocated, with but minor changes and for the present most acceptable for a flat movable stump, is the operation of Hall, from the *American*



Journal of Surgery, 1896, and Husinger, in the *Journal of the American Medical Association* for 1908. The technic is to free the conjunctiva from its attachment at the corneoscleral juncture and is undermined back for a distance great enough to provide for a sliding covering to the eye (Diag. 1 and 2). The opening in the globe is made with a cataract knife and the operator practically resects the anterior one-fourth of the globe (Diag. 3). The resection first started with a knife is completed with scissors (Diag. 4-5). This resection removes the cornea and the ciliary region (Diag. 6). The operator then cuts off above and below a little V-shaped piece of sclera so as to provide for the better apposing sides when this sclera is sewed up, and thereby prevents puckering (Diag. 11). The content of the globe is evacuated with a spoon and then with the use of gauze held in a forceps (Diag. 7). The sclera is freed of all remnants of uveal membranes (Diag. 8). It is proper to flood the sclera with a warm bichlorid solution and make certain that all hemorrhage has stopped, then inspect for shreds of uveal tissues and remove them before proceeding. The hemorrhage may be profuse, but is controlled with hot

water and pressure. "The speculum is inserted within the ball so made to hold the eyelids and edges of the sclerotic opened. The posterior section of the sclera is grasped from within with toothed forceps and a scissors or knife is inserted so as to remove a section at least one-fourth of the posterior end of the globe" (Diag. 9). This flap is raised and the optic nerve severed (Diag. 10). The circular incision and the severance of the optic nerve remove a flap one-fourth the size of the globe (Diag. 11). Hemorrhage is controlled and the sclera is now sewed up and surgically eliminating dead spaces, so unsurgically ignored in the simple evisceration (Diag. 13 and 14). The manner of inserting these sutures is to provide for a closure of this space without burying them and permitting of an easy removal. The sclera is brought together vertically. The suture is inserted into the conjunctiva 2 to 4 mm. back of the severed edge. After passing in, it is then passed from within the sclera through the anterior edge of the sclera and made to enter again through the posterior end passing to the outside and brought out at the anterior end catching up the conjunctiva, and is then tied (Diag. 12). This single thread brings the scleral walls together, though more than one may be inserted if found necessary. This operation is usually done under a general anesthetic, but local anesthesia may be satisfactorily used in certain cases. The sutures are usually removed on the third or fourth day. The reaction following this operation is not greater than occurs in the simple enucleation. The prothesis is inserted into the socket in from seven to ten days. *It is the claim of the writer that this technic offers an opportunity for eliminating the many unsurgical principles adhered to in the simple enucleation and the simple evisceration.*

The above-cited operative technic leaves the muscles undisturbed and attached to the sclera. The superior and inferior oblique muscles continue to serve a useful purpose, for it must be recollected that the superior and inferior obliques, the latter in its whole length and the tendon of the former from its pulley, run backward and outward to be inserted into the posterior pole. The angle which each muscle in approaching its insertion makes with the antero-posterior axis is about 55°. The advantages gained by not severing these muscles are not to be ignored. This may account for the greater elevation to the inner side of the orbit after enucleation and the shell eye is made to take care of this anatomical feature. In enucleation, the check ligaments and the ligament of Lockwood are an essential feature not to be carelessly severed. It is asserted by many that after the simple evisceration the scleral stump may occasion sympathetic ophthalmitis. This may not be charged to the suggested technic.

In 1883 H. Krapp, Fuchs later, and others abandoned the simple evisceration. Schuleck, H. Knapp, Schmidt-Rimpler, deSchweinitz, Wadispuhl and others have noted reactions that made the operation unacceptable. In evisceration the desire is to remove thoroughly all uveal tissue, for it is said that this tissue contains structures liable to produce sympathetic ophthalmia, and as the removal of this tissue is difficult, the operation has fallen into disfavor. The evisceration operation is considered most favorable at the Mayo Clinics, and is very often performed at the Mayos' institution. H. Knapp eviscerated until 1883, when he encountered a severe case of orbital cellulitis and thrombosis which caused him practically to abandon the operation, and his unfortunate cases have influenced many even up 'till the present time. If elementary surgical principles are to be accepted, we may expect just such occurrences as Knapp experienced and the added danger of that uveal tissue which contains such structures that are liable to produce sympathetic ophthalmia can explain his refusal to continue with the technic.

Even Bryant's teachings of elementary surgical principles, in his "Operative Surgery," page 97, says: "It happens not infrequently that the superficial tissues unite promptly and well, while the deep ones fail, and from lack of coaptation of the surfaces form 'dead spaces,' which often imperil and even destroy the prospects of prompt recovery by harboring unwelcome products which cause abscess or sinous formations and this leads to a tedious and protracted recovery."

Recent observations from the Mayo Clinics say: "An undoubted disadvantage, although not a very weighty one, is

the severe reaction following simple evisceration. This is greater than after any other method. The second to fifth day may be very painful to the patient, though rarely requiring morphia. In his "Fisher's" operation of evisceration one or two sutures of silk or small catgut are used to hold the lips of the eviscerated sclera together. Too close suturing does not allow the blood to drain easily and will cause pain. He cuts slits in the conjunctiva to allow the edema following the operation free drainage.

Beard, in his "Ophthalmic Surgery," page 415, adds the desire for a blood clot, with a view to its becoming organized. He says: "Having been assured that nothing is left behind, the opening is immediately closed by several horizontal silk sutures, allowing the oozing blood to fill the scleral capsule, if it will. No attempt is made to stop the moderate oozing of the blood, but rather it is encouraged by mild curettement if necessary, so as to insure a clot of sufficient size to fill the scleral capsule with the view to its becoming organized, thus adding to the efficiency of the stump. In these cited technics of evisceration the surgeon permits either dead spaces or a blood clot, and further this blood clot is within a fibrous envelope with poor chances for organization. *The desire for a clot, gaining little thereby, and disrespect for dead spaces, are unsurgical principles at least of serious import, and to have following such technics a painful stump, orbital cellulitis, thrombosis and meningitis is an accepted possibility.* Is it reasonable to suppose that the organization of this clot will be as readily carried on, considering that it is within a fibrous envelope that has been so thoroughly scraped, and carbolic acid, neutralized with alcohol, is used on these cells, which go to make for us organization? This scleral sac offers resistance in giving assistance to the organization of a clot. The protection from infection is thereby practically nil. That many surgeons have abandoned these unsurgical technics is in my opinion justifiable. After the simple evisceration the stump is movable and prominent, but subsequently these advantages are lost, for the scleral atrophy goes on until the stump is pulled into the socket.

In the operation suggested, the optic nerve is cut and a certain pulling force from behind is reduced. The posterior end of the scleral ring is resected, offering the assistance of vascular tissue in resisting infection and caring for clots and organization.

To recapitulate the claims that the simple enucleation and evisceration are an unsurgical technic, I again cite. In the simple enucleation severed muscles and conjunctiva are ignored. The operation removes an offending organ and does not aim to procure the best cosmetic effect.

In evisceration, dead spaces and blood clots are left within a scleral fibrous envelope, exposing a patient to orbital cellulitis, thrombosis, meningitis and possibly more severe conditions.

DISCUSSION

Dr. E. C. Ellett, Memphis, Tenn.—My hearing or my perceptive faculties must not be working very well, because I did not hear a single advantage urged in favor of this method of operation which the doctor has so lengthily described. If it gives a better cosmetic result he failed to say so. Evisceration is advocated as a choice over enucleation in cases of panophthalmitis where there has been some evidence to the effect that enucleation renders a patient more liable to meningitis than evisceration. As far as my experience, or as far as anything I ever heard to the contrary, goes, I never knew that this possibility applied also to an evisceration. That an evisceration is followed by a prolonged convalescence is certainly true, as compared to enucleation. It takes them a good deal longer to recover, and if the whole scleral shell, being left, undergoes atrophy, as was mentioned in the closing sentences of the paper, I do not see why this simple scleral ring would not undergo the same atrophy; as far as offering a support to the artificial eye it would be about the same as enucleation. I never heard of this operation before. I have never thought to perform it, and I don't know that I ever shall. It does not appeal to me, and I repeat, if the gentleman claimed any advantages for it, as far as I heard his paper, he failed to state what they were.

Dr. G. C. Savage, Nashville, Tenn.—Like Dr. Ellett, I never heard of this operation before. I am not able to see any great advantage in its favor. There is one step in the doctor's technique that I would criticise, and that is his method of closing the scleral ring on itself. People do not notice an artificial eye's failing to move up and down as they notice it in failing to move from side to side. Closing the ring vertically separates the upper and lower muscles. This gives them increased power, and at the same time brings the lateral muscles closer together, greatly lessening their power to move the stump. Closing the ring horizontally reverses the above order and gives increased lateral rotation.

Of all operations, the simple enucleation of the

offending eye is more certain to prevent the loss of the other eye. The time of immunity mentioned in text-books, in some instances, is too long. They truthfully tell you that, after four to six weeks, sympathetic inflammation is always a thing to be dreaded; but sometimes the inflammation comes before four weeks. I have seen it occur after an enucleation, and for this reason one should never say to his patient, "Now that your eye has been taken out you will not have any sympathetic trouble." The organisms already may have started around to the other eye and may have gotten almost to the inside of the eye on the opposite side before the operation is done. After four to six weeks following enucleation sympathetic inflammation will not occur.

We do not take out an eye simply to get cosmetic effects, though this we desire, but to insure, as best possible, against sympathetic loss of the fellow eye. Hence the operation I prefer is simple enucleation.

Dr. Flavel B. Tiffany, Kansas City, Mo.—I am not like Savage and the other fellows who can see no advantage in this. It impresses me that there is an advantage and a decided advantage in this operation over the other two. In the first place he takes out this parietal ring. He cuts up to the ciliary nerve that carried the sympathetic trouble. It is not the optic nerve. He cuts out this ring and he improves the condition of the eye. Then any simple evisceration would scoop it out and leave the optic nerve and all the other nerves. It is an advantage in taking out this ring. I do not see any advantage in putting sutures in there. I do not see that there is any advantage at all; better to leave it.

I never heard of this operation before, but it seems to me that there is a decided advantage in the operation, and I am giving him credit for it. I do not see any advantage in using it except that you eliminate the problem of sympathy and you have nerves and muscles which perform the function just the same as though you had the eye there, and it seems to me it has a very great advantage over the other two.

Dr. George H. Price, Nashville, Tenn.—I am very glad, indeed, that Dr. Tiffany brought out that point. Dr. Savage commented upon it, but Dr. Tiffany laid more stress on it, namely, that the advantage of this operation over any evisceration operation is in removing that part of the eyeball itself which carries the ciliary nerves. That, to me, was the most striking thing in the operation, aside from what else the doctor wanted to get at, namely, he wanted to get a satisfactory stump upon which to rest an eye so that it would have more perfect motion, more than is found in the ordinary stump. I agree with him in some things, but I think he has perhaps overstated the matter in some others. The operation of simple enucleation is indicated in a large number of cases, because it eliminates at once the possibilities of after-troubles. The doctor has not improved an operation for the prevention of sympathetic ophthalmia; he has improved on operation for removing an eye, for the bettering of the cosmetic effect, and he does not refer in the paper to the possibility of trouble in the other eye, and there is nothing about it, so that his method is not one that contemplates the prevention of sympathetic ophthalmia. It is only for cosmetic effect, a surgical procedure for cosmetic effect. All right. If that is the case, then I think the suggestion made by Dr. Tiffany is not a bad one. The one made by Dr. Savage, I think, is better; for if you have a resisting ring upon which all the muscles are practically acting, you have gained something.

Now, then, the most striking thing in this operation as compared with the others is getting rid of that scleral ring which is that part of the eye through or by which we are most likely to get the irritation, which sets up in the other eye any possibility of inflammation. I have seen a few operations, after the Mules method. As detailed by Dr. Ellett, you have a considerable amount of reaction, and reaction in this case is modified perhaps by taking out the posterior scleral ring, which carries the ciliary nerves and the head of the optic nerve.

Dr. Dimitry (closing).—I am very sorry that Dr. Ellett has not heard very well, and I will again repeat the title of my paper, "The Simple Enucleation and Evisceration Are Unsurgical Techniques," and I suggested a surgical procedure that one can logically accept as correcting these faults. I am certain after deliberation many will note and deduce some advantages. Dr. Tiffany and Dr. Price have already noted some. I feel certain that after thought both Dr. Ellett and Dr. Savage will note a surgical improvement.

Dr. Ellett misunderstood me when he says I advocated evisceration, for I condemned it. I advocated an anterior and posterior resection of the globe; incidentally eviscerating. I am sorry that the doctors have not heard of the operation which I desire to help popularize, but in my article I called your attention to the source of my information. I gave credit to Hall from the *American Journal of Surgery* and to Husinger in the *Journal of the American Medical Association*, 1908. I can not understand why they have not read the *Journal* of our great American physicians. I cite many others who condemn these unsurgical techniques and offer suggestions for improvement. A little thought on this subject will be a production of good. I have transplanted fat and other substances into this scleral ring.

DIRECT LARYNGOSCOPY AND BRONCHOSCOPY*

By Cecil Stockard, M.D.,
Atlanta, Ga.

The last decade has seen epoch-making advances in all branches of medical science, but there has been none more important to our department of the pro-

*Read in Section on Eye, Ear, Nose and Throat, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

fession than the development and more general introduction of the direct method of laryngoscopy and the extension of this method into tracheo-bronchoscopy and esophagoscopy.

In choosing a title for this paper I was almost tempted to make it "Direct Laryngoscopy vs. Bronchoscopy," for, although I shall describe briefly the instruments and technic of both procedures, I wish distinctly to emphasize the fact that direct laryngoscopy should be recognized and adopted as a great improvement in laryngological technic, and practiced by all up-to-date laryngologists, while bronchoscopy (including tracheoscopy and esophagoscopy), is in reality a specialty within a specialty.

It may be said that there are two principal schools of per-oral endoscopy,—the Brunings and Jackson,—and the fundamental difference lies in the method of illumination. Brunings and his followers using a proximal light, while Jackson and the adherents of his method use a distal light. Killian's method of headlight illumination, while excellent in the hands of such a master, is not to be recommended to a beginner, as the Brunings or Kahlers' handle with the lighting attachment attains the same result with much greater ease. At the present day only a few of the older bronchoscopists use the headlight, and I do not know of a single one in this country who does so.

The principle of headlight or proximal illumination of the Brunings type is well known to all who have worked with the head-mirror. The rays of light are made practically parallel by the lens or concave mirror, and travel parallel to the line of vision, so that the illumination is practically uniform at any depth. The same principle applies to the automobile headlight. As its rays are made nearly parallel by the lens system, the small lamp is enabled to light up clearly a long stretch of road ahead; whereas, with the older carriage lamp objects are not visible until one is right at them; and this, indeed, illustrates very nicely the action of the small distal light. The region near the end of the tube is beautifully illuminated, while this illumination rapidly decreases as the distance increases. However, much good has been done by both of these methods, and I shall not further discuss the pros and cons, as the individual choice here, as in many other matters, is largely a matter of early training and experience. My own experience has been confined almost entirely to the Brunings and Kahler instruments.

DIRECT LARYNGOSCOPY

The instrumentarium for direct laryngoscopy, or autoscopy, is simple, consisting of a straight spatula long enough to reach over the epiglottis, and curved up at the sides to prevent the tongue from rolling over and obstructing the view. Such a spatula may be used with the Brunings or Kahler handle, or may be provided with a distal light as in the Jackson instruments.

Kirstein, in 1894, began to make direct examinations of the larynx, using a straight spatula, and later Killian introduced the spatula with the sides turned up, which makes the technic much more satisfactory.

TECHNIC

The first requisite for direct laryngoscopy is complete anesthesia of the larynx and especially of the epiglottis. This is best accomplished by a method suggested to me by Dr. Ross Hall Skillern. The solution is prepared as follows: A Yankauer anesthetic cup is filled about one-third full of chrystals of cocain hydrochilorid and then filled up with a solution of adrenalin chlorid 1-1,000 poured directly from the bottle. On stirring this forms a saturated solution, or about 28 % cocain. When this is applied locally there is a maximum local anesthesia with a minimum absorption. The fauces, base of the tongue, posterior pharyngeal wall and posterior surface of the epiglottis are treated with this solution and the patient is ready for the introduction of the spatula.

The second requirement is the proper position of the patient, and in adults this is best accomplished by the use of Brunings' bronchoscopic stool. This is a low stool with a back which curves gently forward, forcing the patient into the proper position, rocking forward on the hips with the shoulders sagging forward. The head is then bent back on the occipito-atlantal articulation only.

This position places the trachea, larynx, and oral cavity in such a position that the only thing preventing a clear straight view into the trachea is the fact that the epiglottis, tongue and the tissues attached to the hyoid bone overlap the line of vision. Consequently, all that need be done in order to obtain such a view is to pull these structures forward out of the way. This is accomplished as follows: With the patient in the position above described, the surgeon stands in front of the patient, and with the thumb and forefinger of one hand protects the upper lip and teeth, while the spatula is introduced with the other hand.

The introduction of the spatula comprises three stages: first, the spatula is introduced as a tongue depressor, pressing upon the tongue while sliding further in until the tip of the epiglottis is seen. Then the tip of the spatula is raised over the epiglottis and advanced about half an inch or more, and then with the tip of the spatula the epiglottis is forcibly displaced forward. As the patient breathes the larynx and trachea are brought into view. It is well to learn to introduce the spatula with either hand, but if one only is to be used, one should follow Jackson's advice always to use the left hand, as this leaves the right hand free to make any manipulation or operation necessary.

The procedure described above deals with the patient in the sitting posture. With the patient lying on his back, the position of the instrument is the same in relation to the patient, but reversed in relation to the surgeon, so that the tip of the spatula must be lowered to pass the epiglottis, and the direction of the traction is upward instead of toward the surgeon.

INDICATIONS

Direct laryngoscopy or autoscopy does not supersede indirect laryngoscopy, but supplements it. As a rule, an indirect examination should precede the introduction of the spatula if possible, and this for several reasons. The posterior surface of the epiglottis can only be examined with the aid of the mirror, as it is largely hidden by the tip of the spatula in the direct examination. The mobility of the vocal cords is more easily determined by the indirect method, as the entire larynx is permitted to assume a natural position, while in the direct examination the larynx is more or less stretched antero-posteriorly, and the pressure of the spatula on the epiglottis makes natural phonation difficult, if not impossible. The color of the tissues (whether hyperemic, ischemic, etc.), should also be observed in the mirror, as in the direct examination the blanching of the tissues from the anesthetic and the engorgement caused by manipulation make observation almost valueless in this respect.

The great field of usefulness of the direct method lies in those cases which are not amenable to the indirect examination, especially children; in the extraction of foreign bodies from the larynx; in those cases in which the mirror gives an unsatisfactory view; in determining the outline of tumors or other lesions in the larynx; in examining those parts of the larynx which can not be seen by the mirror, for example, the posterior wall, the under surface of the cords and the sub-glottic space; in the inspection of the trachea as a preliminary to direct tracheo-bronchoscopy; in demonstrating the larynx, as when the spatula is held in position, any number of observers are enabled to see the larynx with the greatest ease, whereas demonstration by means of the mirror is very difficult and often impossible. Perhaps the greatest usefulness of the direct method lies in operations in the larynx. This includes so many procedures which are much more easily accomplished by the direct than by the indirect method that I can only mention here that it includes everything from cauterizing an ulceration to the most extensive endo-laryngeal operation under a general anesthetic. However, the introduction of suspension laryngoscopy and the improved instruments of Dr. Robert Clyde Lynch, relieve autoscopy of a large part of this burden.

BRONCHOSCOPY

In 1895, Kirstein began to pass the straight tubes through the larynx in order to examine the trachea, but seems to have been afraid of exploring such a dangerous region.

In 1896, Killian removed a foreign body from the bronchus by means of his straight tube, and the following year recommended the clinical use of these tubes, and to his skill and daring we owe the introduction of this valuable procedure.

Tracheo-bronchoscopy consists of passing a straight tube through the larynx into the tracheo-bronchial tree for the purposes of diagnosing and treating pathological conditions and removing new growths and foreign bodies. This last is the most spectacular and most widely recognized.

TECHNIC

The technic of tracheo-bronchoscopy differs from direct laryngoscopy as follows: A long applicator carrying the anesthetic solution is either passed into the trachea through the laryngeal spatula, or introduced through the larnyx by means of the mirror, and through the entire trachea down to the bifurcation and even into the right bronchus if desired, swabbing the entire surface and especially the posterior wall just below the arytenoids and the region of the bifurcation, as these are the most sensitive points.

The tracheal tube is introduced just as the laryngeal spatula until the cords are exposed. Then it is turned so that the wedge-shaped end may pass between the cords, and is allowed to advance by its own weight only, as any undue pressure is apt to do harm to the delicate tissues. After the cords are passed the instrument is again turned straight and the patient directed to change his position until the lumen of the trachea is seen to extend straight ahead if it is not already so. Usually it is necessary for the patient to lean more forward in order to accomplish this.

The tube is now allowed to advance by its own weight while carefully observing the entire field, and no advance should be made until the region ahead has been carefully inspected. This inspection should be just as rigid on slowly withdrawing the tube.

If it is desired to explore the bronchi, the extension tube is introduced through the tracheal tube, and advance is made as before, after presenting the lumen of the branch to be explored.

I shall here mention a few of the conditions which are diagnosed and treated locally by means of the bronchoscope in Skillern's clinic. The cause of dyspnea, whether neurotic or mechanical, is frequently discoverable by this means. Chronic cough is often found to be dependent upon a localized thracheitis or bronchitis which may be relieved by local treatment. Hemoptysis of obscure origin has been found to be due to an excoriated condition of the tracheal mucous membrane which resulted from inhaling irritating chemical fumes and dust, and which yielded to local treatment and removal of the cause. In the treatment of asthma and bronchitis much has been accomplished and still better results are to be anticipated.

The localization and removal of foreign bodies is largely a matter of patience and the skill which comes of much practice on models, cadavers and animals as well as human subjects, an understanding of the mechanical problems to be encountered, and the whole-hearted co-operation of the radiologist, the physical diagnostician and the family physician; for it is to him that the patient looks for counsel in such times of need.

In closing I wish to express my indebtedness to Dr. Ross Hall Skillern for a most delightful course of instruction in bronchoscopy, to Dr. Chevalier Jackson for much inspiration and advice, and to the excellent works of Jackson and of Brunings for a wealth of practical technical information.

Again let me sound the prime note of this paper: direct laryngoscopy for every laryngologist, bronchoscopy for the bronchoscopist; direct laryngoscopy for the many, bronchoscopy for the few.

929 *Candler Bldg.*

DISCUSSION

Dr. R. C. Lynch, New Orleans, La.—The hardest part of bronchoscopy is the passage of the tube between the vocal cords. In adults one acquires this with but little difficulty after some practice, but it is an entirely different matter when it comes to babies.

In the latter type I would suggest to you the method I have used for some time and which was described at the Philadelphia meeting of the American Congress of Surgeons, namely, the introduction of the bronchoscope with the aid of suspension.

A Brunings lamp gives the best illumination for all purposes, but in the baby tube cases I frequently use an ordinary head mirror and nitrogen globe.

Local anesthesia is useful in adult cases, but no anesthesia should be the slogan in children. I know of no more dangerous procedure than the administration of an anesthetic to a baby suffering from a foreign body in the trachea

or bronchus, especially so when there is the least amount of dyspnea present. In substantiation of this I may report the following case of a young boy who swallowed a persimmon seed. He seemed a little too sturdy to hold, so we gave an anesthetic and during the period of excitement from the anesthesia he coughed violently, forcing the seed between the vocal cords, where it effectually corked up the lumen, a rapid tracheotomy was done and with a punch to his chest re-established respiration. Then we introduced the 'scope through the wound and examined carefully for the seed, but it could not be found. Upon looking toward the larynx we saw and removed the seed from its impacted position.

Lastly, bronchoscopy not only should be a means for the removal of foreign bodies from the chest, but should be in our hands a most useful aid in the diagnosis and treatment of pulmonary conditions.

Dr. W. T. Patton, New Orleans, La.—As I stated in Dallas last year in discussing a paper on bronchoscopy, there ought to be at least two men capable of doing this work in each city. I say two men, because when one man is away he can always have some one to leave these emergency cases with, and only two men, because in a city under 300,000 there is not enough work of this kind for more men to become expert. If we all attempt to do bronchoscopy none of us will become proficient. I believe that all laryngologists should be able to pass the esophagoscope and examine or remove foreign bodies from the larnyx and trachea. But when it comes to removing tacks, safety pins, etc., from the smaller bronchi we have a very difficult proposition and the technique can only be acquired by a great deal of practice.

When speaking to Dr. Jackson this past summer he stated he had made the same suggestion five years ago and had been criticised considerably.

One rather interesting case recently came into my service. I was called to the hospital to see a woman who had swallowed her false teeth, a plate with two hooked ends. Skiagraph showed it lodged about level with the point where the aorta crosses. With a 'scope it was easy to locate the plate, which I demonstrated to about twenty men. Then I reached for forceps to remove the teeth, probably moved my 'scope a little, and never did see the teeth again. The dilatation by the esophagoscope caused the teeth to dislodge and they passed into the stomach, which latter could be seen in a skiagraph. The teeth were passed by rectum three days later. It was probably a lucky accident, for it would have been difficult to remove the broken plate.

Dr. W. Likely Simpson, Memphis, Tenn.—There are a good many cases of false teeth being swallowed and being lodged in the pharynx. About ten days ago I had a dentist friend, while in the act of pulling a tooth, let it out of the grasp of the forceps and the tooth was inhaled and was located in the right lung posterior to the ninth rib. I made two different attempts to remove this foreign body, but was never able to see it. The denist knew of Jackson, and I spoke of Jackson's work and advised that he take the patient to him. The patient was taken to him in Pittsburg. After arriving at the hospital the patient had a fit of coughing and coughed the tooth out. He then made a good recovery.

I think that it is unusual for a foreign body as heavy as a tooth to be coughed up.

AUTHORS' ABSTRACTS

Eye, Ear, Nose and Throat

Report of 100 *Consecutive Cataract Operations.* E. A. Knorr, Baltimore, Md. Maryland Medical Journal, Vol. LX., No. 4, April, 1917, p. 82.

The type and results of the operations were as follows:

Eighty combined extractions; 74 successful, 2 partially successful, 4 unsuccessful.

Two buttonhole iridectomies; 1 successful, 1 partially successful.

Thirteen simple extractions; 10 successful, 2 partially successful, 1 unsuccessful.

Five Smith operations; 5 successful.

Totals: 90 successful, 5 partially successful, 5 unsuccessful.

By a successful operation is meant one free from infection and prolapse of the iris and in which there is no delay in resolution.

The most serious complication that can follow the cataract operation is infection, of which there was a group of 8 cases. Two were purulent infections and two were of the fibrinous type of irido-cyclitis, all of which resulted in the total loss of vision. Four were of the mild or serous type of irido-cyclitis which, after a capsulotomy had been performed, obtained a vision of 20-60.

Prolapse of the iris occurred in three of the 15 simple extractions, 20 %, and once in five Smith opperations. Of the 80 combined extractions there were no cases of prolapse of the iris.

Detachment of the retina occurred in two cases. As they are attended by blindness, they are classed as unsuccessful.

The lessons to be drawn from the cases are:

1. That the combined extraction is the safest operation and affords the greatest average of visual acuity.

2. We must not only observe and comply with the most rigid rules of aseptic surgery, but must not operate in an infected field, the latter to be determined by bacteriological examination of the conjunctival sac.

3. Any abnormality of the lids and the tear apparatus such as cicatricial distortion or the presence of cicatricial trachoma or chronic conjunctivitis greatly increases the hazards of the operation. But in any large number of cataract patients there are always a certain number of such cases upon which we must operate. It is from this class of cases which are drawn the unsuccessful and the partially successful ones.

SPECIAL ARTICLES

WHAT TULANE HAS DONE FOR THE COUNTRY IN TIMES OF WAR

By Rudolph Matas,
M.D., LL.D., F.A.C.S.,
New Orleans, La.

[*Editor's Note: In his Ivy address at the closing exercises of the School of Medicine, Tulane University of Louisiana, June 2, 1917, Dr. Rudolph Matas, Professor of Surgery, took up the subject, "What Can the Medical Profession Do for the Country; How Can Every Doctor Do His Bit?" and in the course of his discourse had occasion to refer to the patriotic contributions made by the Tulane faculty and alumni in past wars and in the present crisis. The following abstract prepared by Dr. Matas will be of interest to the many sons of this great school as well as to our other readers.*]

It is now a little over one year since the American Red Cross began to organize and to equip complete base hospital units and laid the foundation for twelve different activities which, under the general designation of Red Cross units, offer any active, capable physician and every trained nurse ample opportunity for service. Thirty-six base hospital units have now been organized under the auspices of the American Red Cross. I am happy at the thought that Base Hospital Unit No. 24 is to be known and recognized as the Tulane Unit, with the Medical School of Tulane as its parent institution.

The professional personnel of this unit is constituted of the members of your Faculty and some of its distinguished alumni who have volunteered for service from our neighboring states. The medical, surgical and laboratory sections are manned by some of your leading and most active teachers, who have pledged themselves to serve in the unit in foreign fields and who are now impatiently awaiting their commissions to proceed to France. The nurses and their aids are, for the greater part, New Orleans women, alumnæ of the New Orleans schools of nursing, including the Touro Infirmary, Charity Hospital, Hotel Dieu and Presbyterian Hospital. The hospital and professional equipment, amounting to $25,000, exclusive of $4,500 worth of supplies (in all about $30,000) have been contributed by the people of New Orleans under the patriotic leadership and inspiring propaganda of the New Orleans Chapter of the American Red Cross. This is the first and only base hospital unit, caring for 500 beds, that has been organized and equipped in the South, — the only unit, in fact, south of Baltimore.

As originally conceived, it had been planned that the administrative and civilian personnel, amounting to over 160 enlisted persons, should have been supplied by the student body of the Medical School in all its grades, thus, practically, mobilizing the whole Medical School,— students and Faculty.

When this suggestion was first acted upon, the response of the student body was immediate and magnificent. As Acting Director of the Unit, I now avail myself of this opportunity to express my grateful thanks to, and my admiration of, the student body for the immediate, unhesitating and spontaneous response to the call for service that followed the posting of the notices for enlistment in the Unit. Fortunately for the class and for the school, but perhaps unfortunately for the Unit, the plan, which had been so well conceived on the basis of the present Italian Teaching Hospital Units, was soon destined to collapse, in consequence of the determination of the National Council of Defense, which, early in April, decided that medical, as well as other students, duly matriculated in schools, universities and other educational institutions, should not be conscripted into service. After the nearly fatal experience of England, we can realize that this resolution was wise and most timely and that the best and most practical service the student can render his country is to remain on the benches in the class room, with the view of perfecting his knowledge so that he may render his country the greater service in his special province.

Apart, therefore, from the administrative personnel, which is to be otherwise enlisted in New Orleans, the Unit is to be directed and officered by Tulane teach-

ers and Tulane graduates. This will be the first collective contribution which the Tulane Unit will make to the war. I feel confident in announcing the list of the professional personnel, as it is now organized and ready for service with the Army abroad, that the people of New Orleans will feel that their contribution to this worthy and generous cause will have been well invested and they will know that their trust and faith in the loyalty and patriotism of Tulane have not been misplaced.

PRESENT STATUS OF PROFESSIONAL PERSONNEL BASE HOSPITAL UNIT No. 24, MEDICAL SCHOOL OF TULANE UNIVERSITY

MAJORS

1. Rudolph Matas, F.A.C.S., Professor of Surgery, Tulane University, Organizer and Acting Director, May 7, 1916-June 7, 1917.
2. John B. Elliott, Jr., Professor of Internal Medicine, Tulane University, Director and Chief of the Medical Section (June 7, '17).
3. Urban Maes, F.A.C.S., Assistant Professor of Clinical and Operative Surgery, Tulane University, Assistant Director and Chief of the Operating Staff.

CAPTAINS

1. John Smyth, F.A.C.S., Professor of Clinical Surgery, Tulane University, Staff Surgeon.
2. Erasmus D. Fenner, F.A.C.S., Professor of Orthopedics, Tulane University, Staff Surgeon (in charge of orthopedics).
3. Joseph Hume, Professor of G. U. and Venereal Diseases, Tulane University, Staff Surgeon (in charge of G. U. and venereal cases).
4. Charles T. Chamberlain, F.A.C.S. (M.D., Tulane), Surgeon in Charge of Infirmary, Natchez, Miss., Staff Surgeon.
5. S. Paul Klotz (A.B., M.D., Tulane), graduate Army Medical School, Washington, D. C., class 1910, Staff Surgeon.
6. John T. Halsey, Professor of Therapeutics and Clinical Medicine, Tulane University, Staff Physician (Acting Adjutant).
7. Joseph D. Weis, Professor of Tropical and Clinical Medicine, Tulane University, Staff Physician.
8. Isaac I. Lemann, Professor of Clinical Medicine, Tulane University, Staff Physician (Acting Quartermaster).
9. Chaille Jamison, Assistant Professor of Clinical Medicine in Clinical Laboratory, Tulane University, Staff Physician.
10. John A. Lanford, Assistant Professor of Pathology, Tulane University; Pathologist, Touro Infirmary, Assistant Director (in charge of Laboratories).

LIEUTENANTS

1. Charles A. Bahn, Clinical Assistant Ophthalmology, Tulane University, Secretary Orleans Parish Medical Society, Oculist.
2. Harold S. Kearney, Clinical Assistant, Ear, Nose, Throat, Touro Infirmary, Specialist (in charge of ear, nose and throat patients).
3. S. King Rand, former Assistant Pathologist, University of Wisconsin; Pathologist, Private Infirmary, Alexandria, La., Assistant Pathologist and Bacteriologist.
4. Paul G. Lacroix, Clinical Instructor Minor Surgery, Tulane University, Assistant Staff Surgeon (ward surgeon).
5. Alexander Ficklen, Junior Surgeon, Touro Infirmary, Assistant Staff Surgeon (ward surgeon).
6. Muir Bradburn, Assistant Demonstrator of Operative Surgery, Tulane University, Assistant Staff Surgeon (ward surgeon).
7. John F. Dicks, Assistant Instructor Gynecology, Tulane University, Assistant Staff Surgeon (ward surgeon).
8. Charles K. Wall (M.D., Tulane), Senior Resident Staff Touro Infirmary, Assistant Staff Surgeon (ward surgeon).
9. E. R. Bowie (M.D., Tulane), Resident Staff Touro Infirmary; Assistant, Radiologic Laboratory, Radiologist.
10. G. E. Tandoz, D.D.S., Dental Surgeon.
11. Oscar Joseph Trappey, D.D.S., Demonstrator, Operative Dentistry, School of Dentistry, Tulane University, Dental Surgeon.
12. Neurologist (under consideration).

While this is the first body of Tulanians who have been commissioned and enlisted for service in this war, it is with pleasure that I recall the fact that several of our graduates have already been called and are on their way to the front, to serve as medical men with the colors in military capacities..

One of our graduates, Dr. M. P. Lane, served in the last Serbian campaign with the first American Red Cross Unit, contracted typhus fever, from which he recovered. He did splendid work near Belgrade and since the return of the Unit, after the suppression of the typhus epidemic, he again enlisted with the Canadian forces and is now at the front in France. One of the former and most popular instructors in the Laboratory of Pathology, Dr. Gurd, enlisted as an officer in the Canadian contingent and, after rendering brilliant service in Saloniki and the Mediterranean, is now engaged with the Canadians in their heroic work

on the Arras front. Dr. R. E. Graham, another of our recent graduates, after completing his course of instruction at the Army Medical School, has been sent with eleven of his classmates to serve in France with an army corps now about to embark for Europe. Captain Austin, of the Army Medical Corps (Tulane, class of 1909), who was so recently with us, as the first military instructor appointed by the Surgeon-General to lecture on this branch, has also gone to the front as Military Director of the St. Louis Base Hospital Unit.

There are many others serving as commissioned officers in various capacities in the foreign service of the Government, but whose present addresses have not reached me. These all constitute the first line of scientific skirmishers who have preceded the greater body of our Alumni, whom we are confident will rally round the banner of Tulane, upholding its best traditions for patriotic service and efficiency.

In connection with the Medical School of Tulane, we can well afford to mention with legitimate pride its long line of loyal and patriotic deeds. During the eighty-three years of its existence, the Medical School of Tulane University of Louisiana has never failed, through its Faculty and Alumni (who now number nearly 4,900), to respond to the call of duty and service in time of war. On May 3, 1898, the Dean of the Medical Department, Dr. Stanford E. Chaille, of honored memory, in his official report at the commencement exercises alluded to the Spanish-American War in the following terms:

"This College has survived and still progresses, in spite of numerous financial panics, of eleven yellow fever and also eleven cholera epidemics, and of two great wars (the Mexican War, of 1846, and the Civil War, of 1861-'65). A third war is now in progress; even if it should be connected with some other public misfortune, it will find at its close the Medical Department of Tulane University (the oldest and foremost medical college of the great Southwest) still pursuing its onward career, still striving to relieve all who suffer, whether friends or foes, from the woes of disease and premature death.

"In 1861 our students numbered 404. The War began and left us in 1862 with but 94,—a sufficient indication of the patriotism of our students. Six years after the War, information was procured of only 427 of our graduates; of these, 240 had served in the Confederate Army; 19 were killed; 3 died of wounds; 5 were permanently disabled by wounds received in action; 16 'died in service,' some of disease, some in prison. To this fraction of the ghastly truth, it may be added that in 1875 *all* of our professors had been, and today a *majority* of them were, officers in the Confederate Army. This roll of honor is probably unsurpassed by any medical college."

In 1898, as in 1861, the call to arms found a prompt echo in the brave hearts of the patriotic sons of our Medical Department and "grim-visaged war" again tested the valor of our students and graduates.

The Spanish-American War made comparatively little demand upon the patriotic ardor and martial capacity of our country; yet, it was sufficient to justify the belief that no medical college can surpass, if equal, our own in the number of graduates who entered military service, and who won distinction for themselves and for their alma mater. At least 54 of our graduates (51 of whom were medical officers) and 13 of our undergraduates, served during this War. There were probably more of whom no information was obtained at the school. The records of the War show that many of these rendered distinguished service and gained the enviable distinction of special commendation from the highest official sources.

In 1898 there were 125,000 doctors and 120 regular medical colleges in the United States. The Surgeon-General of the United States Army appointed from these states about 650 so-called "contract surgeons," 30 of whom were our graduates. There were 20 "contract surgeons" at the battles around Santiago, 7 of these our graduates.

The military and medical conditions under which the United States has entered the present War differ vitally from those of 1898. Our geographical relation to the seat of war is very different; but we may rest assured that the graduates of the Medical School are not "slackers" and will not be found wanting, and that they will sustain the most worthy, the noblest traditions of their predecessors.

PATRIOTISM AND OUR PROFESSION

By J. N. Baker, M.D.,
Chairman, Alabama State Committee of National Defense, Medical Section;
Major, Medical Reserve Corps, U.S.A.,
Montgomery, Ala.

[*Editor's Note: Here follow Dr. Baker's opening remarks at a called meeting of the Alabama State Medical Association held in Montgomery, Ala., June 14. Similar meetings have been, or will be, held in every state of the Union. The address of the Chairman of the Alabama Committee happens to be available for publication in the* Journal. *The same conditions exist in other states and Dr. Baker's remarks will apply anywhere, substituting the name of another state for Alabama.*]

Fellow Members of the Medical Profession of Alabama:

We are assembled here today *not* for the purpose of cheering our National flag; *not* for the purpose of spouting patriotic oratory; nor for the purpose of giving vent to a long string of platitudinous outbursts as to how we all love our country. No! A thousand times no!

But rather is it to take counsel together; to devise ways and means and methods as to how we may serve; serve the country which for so long a time has vouchsafed to us that peace and happiness and prosperity which has made possible a degree of success in life to which each of us may have attained, be that degree great or small.

To every thinking, sane medical mind one very palpable fact should stand out pre-eminently. Your country needs you—badly needs you—if you are qualified to serve. The sophomoric argument frequently advanced by some that they are perfectly willing to serve when they are really needed no longer holds. The doctor who advances such an argument well knows that this is no argument at all.

This present war is the most devastating, the most destructive, both in human life and in property, which the world has ever known. Indeed, it is more than a war; it is a veritable cataclysm in the progress of civilization, the ultimate end of which no human mind can foresee or prophesy. In this great struggle, the medical profession has a part to play second to that of no other group of men. The marvelous strides made by scientific medicine in all of its branches places upon our shoulders a tremendous burden. It is but fair and right that those men who go to the front in defense of our country should have their lives safeguarded and protected with the very best which modern science can furnish.

The Surgeon-General, reposing implicit confidence and faith in the organized medical profession of his country, has appealed to us to supply to the Government the requisite number, from our own civilian ranks, to meet the demands. This appeal was met by our solemn promise to supply this demand — and to supply it promptly.

To meet Alabama's part of this obligation is the prime purpose of this meeting today.

Our country has entered this war with but one ulterior motive in view—to win—be the cost of victory what it may.

It is estimated that, to accomplish this end, it will require an army of at least 2,000,000 men; more likely 3,000,000. To properly officer with medical men an army of 3,000,000 will require approximately 20,000 doctors, who, of necessity, must come from civilian practice. There are in the United States today between 145,000 and 150,000 doctors, including both the physically and the mentally unfit.

Based on these figures, Alabama's pro rata share should be between 300 and 400; probably nearer 400 than 300. There have been examined for the Medical Reserve Corps in this State, to date, less than 100 applicants. The registration returns from the various counties in the State show that there were 236 doctors within the registration age—that is, between the ages of 21 and 31 years.

With these young men who are so fortunate as to have our Government make for them a positive decision, without mental reservation, we are not specially concerned today.

If I may be permitted to borrow a little curbstone vernacular, I should say, "They are Uncle Sam's meat." In passing, it might be well to remark also that, should they desire an easy berth, the Reserve Corps, and not the draft, offers the fewer jolts.

But our principal concern now is to arouse the interest and stir the patriotism of the more mature doctors of this State—those between the ages of 31 and 55—55

being the upper age limit for entrance into the Medical Reserve Corps. Let us not forget that the wisdom, the poise, the saner judgment, elements which can but come through ripening years, will be quite as necessary to leaven this military loaf as the buoyancy of youth. Our armies must not be deprived of these indispensible factors, simply because you and I may have passed beyond an arbitrarily fixed age limit. It behooves each one of us to make sacrifices, regardless of age.

I feel that with the work which has already been done through the Committee of Medical Preparedness and with the splendid organization already existing in practically every county in the State, the work before us will quickly be accomplished. You gentlemen who have been requested to meet here today with our State Committee stand for something definite, something positive, in your various communities; you were chosen because you were believed to be leaders in thought and in action in the various communities which you represent; because you were believed to be loyal and dependable, and that you could be entrusted with the very important task of taking back home to your county societies the real truth of the present situation and to seeing that each county does its full duty. The apparent indifference on the part of some is due rather to a lack of a real knowledge of the gravity of the situation than to a sublime unwillingness to serve.

Upon each of you falls the duty of arousing every good man in your county. Each county in this State must do its full part; it is estimated that each county should furnish immediately one man in six or seven of its membership. This should serve no great hardships. Meetings should be held at once; discuss among yourselves which men can best go and which should best remain at home. Arrange to care for the practices of those who respond. Should a county health officer respond to the call, arrange to carry on this work for him without financial loss; assure those who go that their interests will be safeguarded to the utmost by those back at home.

And, in conclusion, let me remind you that, in the whole history of organized medicine in Alabama, the doctors have never flinched from a full discharge of every duty, every obligation, regardless of cost or of personal sacrifice. Therefore, let the present grave crisis prove no exception to the enviable record thus far made.

THE RELATION OF THE MEDICAL SCHOOL TO THE COMMUNITY*

By W. F. R. Phillips, M.D.,
Professor of Anatomy, Medical College of the State of South Carolina,
Charleston, S. C.

The purpose of the medical school is to teach medicine, to teach it thoroughly, and to teach it completely. Whatever medicine includes is therefore included in the medical school; in whatever way medicine varies, in like manner the medical school must vary; the medical school, in the language of mathematics, is a function of medicine.

Neither in the past nor in the present is medicine constant. It is an increasing variable and with an increment that is itself variable. As knowledge explores new fields or better develops old and fallow lands and garners additional facts to the accumulated stores of information, medicine finds itself in possession of new powers and instrumentalities of progress; finds itself enabled to correct past errors, to clear up many besetting obscurities, to analyze and differentiate more discriminatingly, to attempt new achievements, and to assume new duties and obligations.

Historically, medicine was originally individualistic, a concern between the man and his disease. Whatever the physical or mental derangement, it was his own, dependent upon himself, concentrated in himself, and either eliminated by him or dying with him. It was his body, his make-up, his defects and organic delinquencies (sometimes his spiritual shortcomings), his constitution, that was at fault. The problem of medicine was therefore to cure this sick man, to right his constitution, to bring his bodily ship to an even keel. The medical school, or more consonant with historical fact, the medical schools, as a consequence, were individualistic; also they were schools of thought

*Read in Conference on Medical Education, Southern Medical Association, Tenth Annual Meeting, Atlanta, Ga., Nov. 13-16, 1916.

and not of investigation, schools dominated by the various philosophical concepts of the few original minds that, from time to time dared to think for themselves. But, one common idea was a nucleus in all, the idea of the individualistic nature of disease, of its constitutionalism. This dominating idea naturally withdrew, subconsciously we might even venture to say, medicine and medical schools from the general concerns of communal and civic life; brought about that peculiar aloofness from the every-day affairs and activities of organized society that has been so noticeably characteristic of medicine and the practitioners of medicine throughout historic time. By long prevalence, it established a custom, a tradition, that has persisted even after the cause has ceased to be operative. Even today, we still find that spirit of aloofness almost as distinctive of the medicine of the twentieth century as it was of the fifteenth, notwithstanding that we clearly recognize that disease is now not an individualistic but an aggregative concern; notwithstanding that so far as health is concerned man has truly become his brother's keeper.

The self-imposed aloofness, apartness, of medicine and the medical school from the general activities of life has had its impress upon the educational world at large. The foundation studies of medicine have not been accorded even place in, or have but only recently been admitted, and that after great opposition, to the cultural and scientific curricula of some of the higher institutions of learning. And there is still a strong feeling that the scientific branches of medical study are not cultural and not entitled to recognition in university courses for the cultural degrees. Under the compulsion of necessity rather than under that of reason, some liberal arts schools are admitting that the study of the structure of the human body may be as valuable perhaps as the study of Sanskrit, and a knowledge of the functions of life may be as educational as the Odes of Horace. This condition has certainly been detrimental both to medicine and to general education and through it to progress at large. And why has this condition existed? Simply because medicine has itself so long kept apart,—and has so wished it. But fortunately a change is taking place, slowly, it must be confessed, almost imperceptibly, but still certainly.

When the conception of the constitutionalism of disease began to give way before the discoveries of science, medicine entered upon another phase of its development. With a correct knowledge of the causation of the so-called acute and contagious diseases and a keen intimation, almost approaching an assurance, that all the others of the same class were likewise of kindred causation, and that even many of the other diseases, the so-called constitutional class, the idiopathies, might be of like or analagous causation, a greatly enlarged field of activity was opened, suddenly, as it were, to medicine. The medical school found itself unexpectedly all but archaic in organization and methods. It had to readjust itself completely, to obtain an orientation in surroundings with which it had supposed itself perfectly familiar. All this has occurred, dating back from the present, within the half century, most of it within the quarter century. With greatly enlarged opportunities and improved and new instrumentalities for work and investigation, there came a sense of other obligations and duties; a sense that medicine was no longer necessarily and solely concerned with the ministration to the sick individual nor wholly with disease after it had occurred, but that it could consider, at last, the prevention of disease from the vantage point of precise knowledge and the possibility, nay the practicability, of making it impossible, of eliminating it from the category of human discomforts.

The newer developments and conceptions of medicine brought with them the consciousness that medicine should no longer remain apart from the communal life and activities. This consciousness has found expression in several concrete manifestations, such as urging and securing the enactment of more rational laws regarding water supply, sewage disposal, quarantines for certain diseases, food inspection and some others. It also has found expression in laws regulating the practice of medicine, to the end that only those educationally qualified by proper training and experience shall be permitted to offer their services to the public, a guaranty of protection from ignorance and imposture. Concomitantly or slightly sequen-

tially, there have likewise come into being new communal activities, the so-called welfare associations, such as social service societies, settlement workers, child welfare leagues, eugenic propagandas, and others. It is particularly to these organizations that attention should be directed; for though somewhat inchoate and vague in their present workings, they are so largely concerned with the application of medical facts and principles as to be regarded as aspects of medicine. They are, in a manner, the exponents of a dawning popular expectation and confidence in what the medical sciences can do to help humanity as a whole.

It is particularly important to notice that while these various activities are organizing themselves for what may be progressive as well as aggressive work, both their membership and their officials are non-professional to all intents and purposes; that is, these organizations that are to work largely with medical facts and upon foundations and principles very largely based upon the medical sciences, are of laymen, laymen essaying to interpret and apply some of the most abstruse of the biological propositions and principles of medicine. And here, once more, we may query, why are medically educated and trained men so conspicuously absent in the leadership and councils of these associations? No other class of men are brought by virtue of their daily avocations into such intimate contact with their fellowmen as are physicians; no others see so much of the effects of anxiety, privation, poverty, of bad physical environment, of distressing and often degrading moral surroundings and influences; no others recognize so clearly nor so unmistakably the stigmata of bad heredity, and the sign manuals of a diseased inheritance. Yet, we find the medical profession virtually unrepresented and uncounseling in these organizations. Medical men and medical institutions should be the leaders and counselors in these and kindred matters as well as in the actual care and management of the sick and the injured. And again the question, why are they not? And once more the answer, because medicine has so willed it. The old individualistic tradition lingers despite the advance achieved in knowledge and the clearer conception of what medicine has become.

The obligation of the medical school to teach medicine thoroughly and completely, to graduate only those that have been trained and educated in the most thorough manner and the most advanced methods and practices, is manifest. It was a moral obligation for centuries and now there has been added to the ethical the legal obligation. This relation of the medical school to the community needs no discussion; it is both obvious and legally imperative. But a new relation to the community, to the state, and to the country, has come to pass with the advent of the newer knowledge of the causation of disease and the clearer recognition, that both the cure and the prevention of disease are no longer comprised within the prescribing of drugs and the regulating of personal conduct and habits. It is here, that the medical school must adjust itself to the community, just as it has but recently had to adjust itself to the newer developments in the sciences of medicine and their teaching.

Disease and the evil consequences of disease are not desired by any sane individual; health is by all. The most primitive instincts prompt and actuate man to care for his personal comfort and enjoyment, both of which obviously are dependent upon health. Without health, pleasure is impossible and life burdensome. No one deliberately sets about to injure his health—that is, if he be certain that what he contemplates doing will injure it. Ignorance, and ignorance alone, leads man to commit or to omit that which brings illness or avoids it. Remove this ignorance, replace it by knowledge, and the motive to continue doing that which induces illness disappears. In matters of health those only who have prepared themselves by study and investigation of the departures from health, of disease, are in position to advise reasonably and with a degree of probability that approaches certainty. As our social organization exists, these are the doctors of medicine graduated from the medical school.

But disease, the departure from health, is not an isolated event, an individualistic occurrence, dependent upon the individual himself. On the contrary, it is dependent upon his environment, physical and social; not so much upon what he may do or leave undone as upon what his neigh-

bor may have done or left undone; upon what his neighbor is doing and is not doing; upon what those before him have done and have failed to do; upon the heredity that has come to him from his parents and their progenitors. What the individual does or does not is more likely to injure others than to injure himself. His typhoid fever, his malaria, his diphtheria, and all the long list of infections, came from some one's else neglect, ignorance, or indifference; and they may go from him by his negligence, his ignorance, his indifference to some one else; because his excreta polluted the soil, his garbage can was the home of myriads of flies, his rain barrel, refuse tin cans, undrained back yard, were the breeding places of countless mosquitoes, and so on throughout the category.

All the foregoing, and very much more, is well known, trite to threadbareness, to medical men themselves; but to what extent is it common information to the great mass of the people at large; to what extent has it reached them in that shape that we call knowledge and as such is influencing and guiding them in their daily pursuits and pleasures. I think candor will compel us to admit that but relatively few thousands of the hundreds of thousands of our countrymen have it and act by it. I think candor will compel us also to admit that if this information, this knowledge of the elemental causes of disease, a knowledge that reaches down to the level of the capacity of the least informed, were commonly possessed, we would not find so much difficulty in securing the practice of the elementary principles of hygiene. Nor would we find so many people running after the strange gods of the nostrum exploiters nor worshiping in the groves and high places of miscalled sciences.

The positive knowledge we now possess regarding so many diseases, their etiology, their modes of transmission, their cure, their prevention, and the possibility of their ultimate eradication, requires a readjustment of our educational work, an enlargement of the curriculum to include something more than the consideration of the sick man in his individual capacity and the incidental hygiene of his immediate surroundings. We must now consider the sick man as exponential of the community, of a communal organism needing attention and advice. We must consider the doctor of the future as not working within the secrecy of the sick room, behind the privilege of personalism, but as working in the community in the interest of the community, protecting it while helping the individual, working for the future rather than the present. We must also consider the doctor working not alone or only with the co-operation of the sick and his immediate attendants, but with the co-operation of the community, the hearty co-operation of the public, as heartily as they would help and applaud the fireman fighting the flames or the police quelling the madness of the riot. The medical school must prepare its graduates not only to give the best care practicable to the sick that consult them, but to realize that the individual sick man is but a particle in a larger sociologic congeries, and that it is as much the doctor's obligation to know the signs and symptoms of what is wrong with that congeries as it is with the separate particle of it that asks his advice.

The advancement of medical knowledge by research is a well recognized function of the medical school; the importance and obligation of this function has been ably set before us. But knowledge is useful, is power only when it is used. To add to knowledge without adding to the means of spreading it abroad, of placing its powers at the disposal of the greatest number capable of using them, is to deprive knowledge of a large part of its merit. The obligations of the medical school and its relations to the community increase in proportion to what medicine has to offer to the community that is good for it.

Too much is often taken for granted when assumption should be replaced by assurance. We require of the medical student upon entering upon the study of medicine a modicum of physics and of chemistry, and we also particularize that he shall know something about frogs, lizards, and worms, and maybe a mammal or two, but we are quite silent in the matter of our student's knowing anything of the habits and conditions of humanity. We take for granted he knows the intimate and complex interworkings of the social machine when, as a matter of common knowledge, the student is poorly in-

formed; he is crude and raw regarding the physical and moral conditions under which society exists and struggles and under which he himself will have to work in his graduate years. During his professional instruction, he is not advised regarding these matters and, at his graduation, he goes forth with a knowledge of disease but without a knowledge of humanity. The old individualistic conception of the function of the physician is his, and he takes refuge in it. Sociology from the viewpoint of its medical relations should somewhere come into the medical student's future education; either he should know beforehand something of the sociological condition he is later to encounter or he should receive instruction therein during the medical course. But some may say that all this is medical education pure and simple, not the relation of the medical school to the community. It is both; both are bound now inseparably together.

Universities have of recent years awaked to the value of reaching out into the community at large and of carrying, as it were, some of the advantages of the university to those that can not come to it, and have established extension courses in general cultural subjects and even in some of the technical and general scientific subjects. Why should not the medical school, an integral part of the complete university, recognize its like obligations and opportunities? Some few, in a measure, have done so in conducting from time to time short lecture courses upon some more or less popular or for the moment catchy topics. These courses have reached, however, only the immediate locality of the school. They have done good as far as they went, but their radius of influence has been too circumscribed. These educational attempts must be converted into systematized endeavors. A new relation of the medical school to the community is to be that of an educational propaganda, a place from which the public is to receive knowledge, and to which it is to turn to get knowledge, of what medicine can do to make life freer of its errors and sins against the principles of biology and hygiene.

In morals and in politics, dogmas and policies are disseminated by organized propagandas. That which is to heal the soul of man and that which is to enhance his political advantages and prerogatives both find apostles, salaried directly or indirectly, to promulgate their particular doctrines and principles and to educate the people to seek that which each claims is best for them. Is there any such propaganda in matters of health? On the contrary, has there not been a distinct, even formulated prohibition against such propaganda? Does not the medical profession frown upon or actually condemn popular lectures, and popular contributions to the general newspaper and magazine press by its members as bad form if not actually unethical? Such is my impression. May we not seriously ask ourselves if this be correct, if this be the right attitude? To me it is not unless we provide some other channels of communicating the elemental knowledge regarding health and the prevention of disease that we possess, and which we know is and will be valuable to every one else to know, and which every one else can know if intelligently apprised thereof.

Taking things as they are, there may be said to be three medical bodies, the practitioners, the official health authorities, and the medical schools. It is from these three that the general public must obtain its instruction in medical matters. Each may take a part in informing the public, and to a limited degree each has done so; but by organization and purposes the medical school is the best qualified to do it.

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Dr. SEALE HARRIS, Editor
Dr. M. Y. DABNEY, Associate Editor
C. P. LORANZ, Business Manager

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EDITORIAL DEPARTMENT

MEDICAL CORPS NEEDS 17,000 MORE DOCTORS FOR THE ARMY

We wish to direct the special attention of our every reader to the following authorized statement of Surgeon-General Gorgas regarding the needs of the Army. It is reprinted from the Government's *Official Bulletin* of June 16:

The Medical Corps must have 17,000 more doctors for the Army, and it needs most of them now. In Germany when the army has such a call the Government orders the doctors to join the colors, and that is all there is to it. This Government is loath to follow that example. Doctors coming into the Medical Officers' Reserve Corps are commissioned as first lieutenants, captains, or majors in the service, and are liable to be ordered to any duty required of their grade. The Surgeon-General's endeavor is to put each man where he is most needed and where his specialty will count most.

FOREIGN SERVICE THE ATTRACTION

Foreign service is the attraction, and it will eventually fall to most of the corps. The examination of recruits and the care of their health through treatment and in a much broader way by sanitation is the matter of earliest importance, and it will be the first duty of many of the new medical officers.

The United States needs more medical officers than France or Germany, because, through lack of universal military training, the difficulties of examining recruits will be multiplied many times, and because we wish to aid our allies and also give the best service to our own soldiers and sailors.

The country needs more doctors now that they may be trained in military ways, in sanitation, and in the surgical methods developed by Dr. Carrel and other surgeons since the war began.

QUALIFICATIONS REQUIRED

An applicant must be a graduate of a reputable medical school and be between 22 and 55 years of age. The annual pay of a lieutenant is $2,000; of a captain, $2,400; of a major, $3,000; with an additional 10 % in each case for foreign service besides quarters. Any physician who intends to join the Medical Officers' Reserve Corps should communicate with the chairman of the board most convenient to him.*

Never has there been a greater demand for sacrifice, but it is the sacrifice for country. The country is in the war to win, and no class is more needed at the present time than doctors.

CONDITIONS IN ENGLAND

The surgeons of England and France need help both at home and in the field.

"English physicians have given themselves to the army so freely," says Col. T. H. Goodwin, R.M.C., "that in some of the more populous districts there is but one physician for 6,000 people left in England.

"The English surgeons have worked desperately. They frequently, after great military engagements, keep their boots on for a week at a time, working 14 and 16 hours a day. But they have learned their lesson; and where at the war's inception they detailed 20 medical officers and assistants to care for the sick and wounded in 500 beds, now with the aid of two more officers they give equally good care to a thousand."

Col. Goodwin, who has been through the war, beginning with the first expedition to France, and the great retreat from Mons, has been detailed to lend his great experience to the United States Medical Corps, and he unfalteringly advises the greatest possible number of medical officers at the earliest date. He flatly contradicts the story that 60,000 English doctors have lost their lives in the service, the total loss not being 2 % of that number. There are only 12,000 surgeons in the English Army.

CARPE DIEM!

With the work of the organization of the enlarged Army and Navy going on at a rapid rate, and for the present with

*Complete list of names and addresses of chairmen of examining boards will be found on page 619 of this Journal.

what seems to be an ample number of young men registered under the selective conscription law, the country is naturally asking, "What is the matter with the medical profession? Why do not physicians respond in greater numbers?"

Word comes that only about a fourth of the required number of doctors have answered the call. Many say that they are "ready when needed," but that until then they prefer to remain at home and practice. As a matter of fact, the need is imperative right now and could not be made plainer than it has already been illustrated by the various appeals of the Government which have been and are being sent out from time to time.

Men in all other professions as well as those in business are everywhere looking the matter squarely in the face and are making sacrifices for what they consider to be their plain duty. It is clearly a time for personal sacrifice and an opportunity to test one's true patriotism. All of us rise when "The Star-Spangled Banner" is being played and loudly applaud patriotic utterances. Shall we let our enthusiasm end there or shall we show that we are sincere in our professions of love of country by offering ourselves to some branch of the medical service?

Let us remember that in the line any able-bodied, intelligent man can be trained in six months or so to become a pretty good soldier, but that the doctors can be recruited only from one class, — namely, the medical profession,—and that whereever possible we should volunteer and allow the Government to say whether or not we are fit. *"Carpe diem!"*

MEDICAL ENLISTMENT: DR. BLOODGOOD'S LETTER

Dr. Joseph Colt Bloodgood, of Baltimore, Chairman, Committee on Preparedness of the Southern Medical Association, in a letter to the various chairmen of the state committees of National Defense, says in part:

"There is no doubt that, through the splendid work of the state committees of National defense, the number of men who are volunteering in the Medical Reserve Corps is increasing,—but not too fast.

"Really to make a proper selection with justice to all, the Surgeon-General should have at least 20,000 members of the medical profession in the Medical Reserve Corps.

"At the present time the actual number of men holding commissions is about 3,000. The number of commissions which have been recommended is about 8,000. If these are accepted the number in the Officers' Reserve Corps will be about 11,000. But many of the men are not available at once and there are not a sufficient number under 35 years of age.

"The actual number of men in the Medical Corps of the Army at the present time is less than 600. When the Army is recruited to its full strength of 300,000 they will need 2,100 medical officers. About 300 or 400 are going through the examination now.

"I would suggest that, during the next two weeks, your Committee concentrate on bringing this need before the profession in your State. We need, first, young men under 32 years of age with one year's hospital experience for the Medical Corps of the Army. We need, second, men, physically fit, under 35 years of age for the new army which is to be concentrated in camps by September 1.

"Through the efforts of the *Journal of the American Medical Association*, practically every doctor in the country has received a circular, but, apparently, the best way to get these young men, physically fit and best trained, is through the personal efforts of the state committees and the sub-county committees. In some cases it may be necessary for some of your most influential members to go throughout the state and meet the profession personally and bring this need before them.

"In spite of the splendid work of the Medical Committee of the National Council of Defense and the various state committees and the propaganda of the *Journal of the American Medical Association*, I am convinced that there is still a large opportunity for educational work by the individuals throughout the states and counties. Especially is this true in order to influence the proper men to enter the Medical Corps of the Army and get the younger group for the Officers' Reserve Corps.

"I am taking the liberty of addressing you again, because I have given this subject, since my appointment as Chairman of this Committee, intensive study, and I am assured by the Surgeon-General's Office that the propaganda which this Committee has instituted has been very helpful.

"I would appreciate receiving from you any suggestions by which this Committee can be more helpful to your state committee in their very important work."

SHALL PHYSICIANS BE DRAFTED?

Since the fact must be admitted frankly that medical men are not answering the call to the colors in anything like adequate numbers, the question comes up as to the best method of obtaining their services. In this connection the Government's *Official Bulletin* of June 25, 1917, contains the following, which suggests at least one possible procedure:

"Claiming that the volunteer system of recruiting physicians for the Medical Reserve Corps of the Army has proven unsuccessful, Major Karl Connell, Major Richard Derby and Captain Frederick Van Beuren, of the New York Committee for National Defense, Medical Section, have presented to the Council of National Defense a report urging the drafting of physicians selectively upon a basis of Federal classification by a special medical census similar to that recently secured in New York State.

CONSTITUTIONALITY ESTABLISHED

"At a meeting of the general medical board of the Council of National Defense here today Dr. Connell demonstrated that out of the 140,000 doctors in the United States less than one-half were available and desirable for military purposes. He stated that the policy of allowing or urging doctors to volunteer indiscriminately in the enormous numbers that are needed for medical officers in this war would result in confusion, waste, and failure. This analysis of the Medical Reserve Corps in New York State clearly indicated that the volunteer system failed to preserve the integrity of the public health service or to protect the local community medical needs and that it neglected to consider the individual physician's family and professional connections.

"Dr. Connell urged that a selective medical draft, based upon special classification by census, would accomplish the desired result by bringing into the Army those best fitted for its uses and by leaving at home those physicians most needed by the community. The constitutionality of legislation required to legalize the draft of doctors has been established satisfactorily by an opinion from the Judge Advocate General's Office."

BREAD

The London Daily Mail, in a recent editorial entitled "We *Must* Eat Less Bread," gives a resume of the reforms that will be brought about by the recent order of the British Food Controller. It is estimated that this order which went into effect in April will reduce the consumption of meat by 56 % and bread by 53 %.

A quotation from this editorial will give some idea of the food situation among those who are fighting our battles in Europe. It says:

"Every man and woman in private life should follow the general principles of the new order, so far as regards the meatless and potatoless days." (In the same issue it says that potatoes have about disappeared from the London market.) "It is a matter of most urgent necessity to economize bread in every way possible. All who can afford it ought as a duty to consume other forms of food instead, even though they are luxuries. Mr. Kennedy Jones has well said that 'The Nation would not suffer if all the turtle soup and caviare were eaten up. Expensive fruits and vegetables in and out of season, which are never seen on the table of the poor, are also available. Bread must be left for the poor.'

"There are plenty of substitutes which can be served in place of bread in any middle or upper-class household. Oatmeal, barley flour, rice flour, and rice, to say nothing of lentils, and nuts, and maize, provide the cook with abundance of choice. Bread should be saved and spared in every conceivable manner and should never henceforth be placed on the table ready-cut or made into toast. For the really poor the conditions are different. They must have bread because it is their principle article of diet.

"If we can save a weekly average of a pound of bread per head then we shall defeat the submarine blockade. The situation is so exceedingly serious that it calls for the utmost self-denial and care. Thoughtlessness in the consumption of food has become almost as dangerous to the cause of freedom as open disloyalty."

The above was written as an appeal to the English, but it should prove an incentive to each patriotic American who reads it to economize in bread, that our Allies may suffer less.

Of course every one should eat enough bread. There is, however, no doubt that the average person consumes at least one-third more bread than he needs. If the consumption of bread in America were cut down 25 % we would be better off and our English cousins and French friends would have plenty as soon as the ships can carry it to them.

It ought not to be a hardship for us to reduce our consumption of wheat products by one-fourth. Most of us have

been taught to eat corn or muffin bread. If not we can soon learn that they are as palatable and that they have as good food values as breads made from wheat flour. Bread made of equal parts of flour and corn meal has a better flavor and is as nutritious as that made from the most expensive brands of wheat flour. The French and English do not know how to cook corn meal. But few of them have ever eaten corn bread of any kind and in this emergency they can not be taught.

Hominy, both the cracked corn and the old-fashioned "lye" varieties, or "grits," are inexpensive substitutes, and are quite as palatable, with a little effort to cultivate the taste for them, as the expensive breakfast foods which are usually made of wheat.

We also have an abundance of other carbohydrates which may be used as substitutes for wheat, viz., potatoes, rice, oatmeal and barley. We often eat enough starchy foods for a meal in these wholesome articles of food, and then too much bread in addition. When we have a "cereal" we could get along well with only one slice of bread.

Physicians should feel it a patriotic duty to inform their patrons and friends regarding the substitutes for wheat products. It may be done in their daily rounds or by brief articles published in their local papers. The average person values the opinion of the physician, whom he knows personally and in whom he has the confidence to trust his life when ill, more than that of the food expert in Washington or elsewhere. Physicians should also set the example in their homes by seeing that they themselves and their families eat less wheat and more corn products.

SIMULTANEOUS LIGATURE OF ARTERIAL AND VENOUS TRUNKS

The great war, while decimating the ranks of the medical profession in many instances and claiming untold thousands of other dead as its reward, has furnished the greatest clinics of traumatic surgery which the world has ever known. The Carrel-Dakin method of wound sterilization may be mentioned as notable among the contributions to surgical science.

We now learn that Captain Cowell, of the Medical Department of the British Army, has recorded a short series of observations on the "Simultaneous Ligature of Artificial and Venous Trunks in War Surgery,"* which would seem to upset our former ideas of such conditions. Heretofore, all authorities have taught that when the main artery to a limb is ligated, simultaneous ligation of the vein means that amputation will inevitably be necessary.

All of Cowell's cases do not include ligation of both vein and artery, but they are of sufficient interest briefly to be summarized.

For damaged popliteal vessels he ligated both the saphenous and popliteal veins. The circulation seemed to establish itself, but amputation became imperative forty-six days later for "sepsis of the calf."

Again for wounds of the popliteal vessels both vein and artery were ligated above and below. A perfect result had been obtained when the case was last seen, three months later, as there were neither symptoms nor was there edema.

A wound of the superficial femoral vessels where both vein and artery had to be ligated was followed for six weeks, at the end of which time small gangrenous areas at the tips of the toes were seen, not unlike the appearance of Raynaud's disease.

The next case was that of a soldier who

*Cowell, E. M.: Brit. Med. Jour., No. 2940, May 5, 1917, p. 577.

also had received an injury to the superficial femoral vessels. Both artery and vein were ligated in Hunter's canal. One month later the foot was described as being "quite healthy."

For a wound of the left femoral vein and thrombosis of the artery, the vein was ligated and the artery opened, the clot liberated and the vessel sutured. The artery again became thrombosed, but on the twenty-first day the circulation was good, though there was a slight edema.

Another man with a compound fracture of the right tibia and an injury to the peroneal and posterior tibial vessels underwent a ligation of the peroneal artery and vein and the posterior tibial artery and vein. The result was "some edema of the foot but perfect circulation."

The last case cited was that of a wound of the right femoral vein and artery which necessitated a suture of both, with an uneventful recovery as the result.

While the above series is small, it throws new light upon an old subject and suggests a probable means of saving many limbs in the future which might otherwise be lost were we to follow the generally-accepted teaching.

DISEASES AMONG THE NEGROES

To that brilliant Frenchman, Louis, is usually given the credit of being the father of vital statistics. Before his time little was thought of the importance of recording incidence of diseases or of tabulating extensive data concerning their symptoms and lesions. Louis would divide his time about equally between the clinic and the autopsy room.[1]

One of the most striking outward differences between the physician of today and of the past generation is the fact that the former keeps written records of his cases, whereas it was by no means the rule with the older doctors.

1. Holmes, Oliver W.: "Medical Essays."

We of the South who have so much work among the Negro race, particularly in our hospital services, have an excellent opportunity to make valuable statistical contributions to the subject of diseases among the colored race. We know that different peoples are susceptible to different lesions. Diabetes among the Hebrew, helminthiasis among the Syrians, and tuberculosis, syphilis, fibroids and keloids among the darkies are the most notable examples met with in everyday practice.

Dr. Henry H. Hazen,[2] of Washington, D. C., has made it an especial point to study the occurrence of skin diseases among the Negro. Dr. Wm. H. Deaderick,[3] of Hot Springs, Arkansas, has been studying the colored race with special reference to certain spinal cord diseases, and laments the fact that the census statistics offer no help in that respect and that for the most part the Southern states are not in the registration area.

We would urge our readers to pay more attention to this important subject, which will also be found a very interesting field for investigation.

POST-GRADUATE WORK FOR HEALTH OFFICERS

In a recent number of THE JOURNAL the necessary training for a health officer was discussed. We endeavored to point out the importance of special training for the physician who intends to take up public health work, mentioning the fact that the general practitioner, who has not had post-graduate work in preventive medicine, or who has not had experience in public health work, cannot hope to accomplish so much as the highly-trained sanitarian.

It is not only advisable, but it is neces-

2. Hazen, H. H.: "Skin Diseases." St. Louis: C. V. Mosby Co., 1915.
3. Personal communication.

sary, to have a degree in medicine before taking up the specialty of public health, just as it is for the ophthalmologist, or for the surgeon, before taking up either of those specialties.

Dr. Osler once made the statement that "no physician should be allowed to take up any specialty in medicine without having had ten years experience in general practice." This dictum would hold for the man who intends to specialize in public health, because the physician who has had bedside experience is then prepared to begin the study of scientific and practical public hygiene.

General practitioners have often gone into public health work and have made brilliant successes. Indeed many of our ablest and most distinguished health officers have been men of that class. They have been the ones who have developed the specialty of public health, just as the general practitioners years ago gradually specialized in eye, ear, nose and throat, and more recently in surgery, obstetrics and the many other branches of medicine. The time has come, however, when no physician would think of practicing a specialty without having had post-graduate work, or without having served as an assistant to some recognized specialist in the field of work that he has chosen.

The degree of doctor of public health was, we believe, first conferred, as an honorary title upon Dr. W. A. Evans, of Chicago, by the University of Michigan, in 1911. Since then Harvard and Tulane, and perhaps others, have established departments with graduate courses in preventive medicine, leading to the degree of doctor of public health. The work in this line in Tulane is particularly attractive to health officers residing in the South because of its prodigious clinical material in the tropical diseases that form so large a portion of the communicable diseases prevailing in the sixteen Southern states. Recently Johns Hopkins has received an endowment with which to establish a department of preventive medicine, and it will of course be conducted upon the same high standard as the other departments of that great institution.

The physician who contemplates going into public health work—and it is a field of wonderful opportunity for the well-trained medical man,—should take post-graduate work or should serve with an experienced sanitarian before he can expect to be regarded as a sanitary expert.

EXAMINING BOARDS FOR MEDICAL RESERVE CORPS

The Surgeon-General's office desires all applications for Medical Reserve Corps to be sent to nearest examining board. Here follows a list of names and addresses of the chairmen to whom such applications or requests for information and application blanks should be sent. Applicants should select the board most accessible even if such board is in another state.

ALABAMA

Birmingham—Capt. John M. Lowrey, M.R.C., 727 1st National Bank Bldg.
Mobile—Capt. John O. Rush, M.R.C., 412 Van Antwerp Bldg. (also O'Gwynn and Kilpatrick).
Montgomery—Major J. N. Baker, M.R.C., Bell Bldg., President.

ARKANSAS

Hot Springs—Commanding Officer, Army and Navy General Hospital.

DISTRICT OF COLUMBIA

Washington—Commandant, Army Medical School.
Washington—Major Abram B. Hooe, M.R.C., 1220 Sixteenth St., N. W., President (local only).

FLORIDA

Ft. Barrancas—The Surgeon.
Jacksonville—Capt. Graham E. Henson, M.R.C., St. James Bldg.
Key West Barracks—The Surgeon.
Tampa—Lieut. E. H. McRae, M.R.C., American Bank Bldg.

GEORGIA

Augusta—Major Eugene E. Murphy, M.R.C., 432 Telfair St.
Ft. McPherson—The Surgeon.
Ft. Oglethorpe—The Surgeon.
Ft. Screven—The Surgeon.

KENTUCKY

Ashland—Lieut. John W. Stephenson, M.R.C.
Bowling Green—Major Arthur T. McCormack, M.R.C.
Louisville—Captain Frank T. Fort, M.R.C., The Atherton.

LOUISIANA

Baton Rouge—Capt. Charles McVea, M.R.C.
Jackson Barracks—The Surgeon.
New Orleans—Major Isadore Dyer, M.R.C., 124 Baronne St., President.
Shreveport—Capt. T. P. Sloyd, M.R.C.

MARYLAND

Baltimore—Capt. John S. Davis, M.R.C., 1200 Cathedral St.

MISSISSIPPI

Hattiesburg—Capt. W. W. Crawford, M.R.C.
Meridian—Lieut. I. W. Cooper, M.R.C.
Vicksburg—Capt. J. S. Ewing, M.R.C.
Winona—Major J. W. Barksdale, M.R.C.

MISSOURI

Columbia—Major Mazyck H. Ravenal, M.R.C., University of Missouri.
Ft. Williams—The Surgeon.
Jefferson Barracks—The Surgeon.
Kansas City—Major J. F. Binnie, M.R.C., Rialto Bldg.
Springfield—Capt. Joseph W. Love, M.R.C.
St. Charles—Dr. Frank J. Tainter.
St. Joseph—Dr. Daniel Morton.
St. Louis—Capt. William H. Luedde, M.R.C., 311 Metropolitan Bldg., President.

NORTH CAROLINA

Ft. Caswell—The Surgeon.
Greensboro—Major John W. Long, M.R.C., 119 Church St.

OKLAHOMA

Ft. Sill—The Surgeon.
Oklahoma City—Lieut. Rex. G. Boland, M.R.C., 1524 West 29th St.

SOUTH CAROLINA

Charleston—Col. A. N. Stark, M.C.
Columbia—Major Mazyck H. Ravenel, M.R.C., State Board of Health Laboratory.
Ft. Moultrie—The Surgeon.

TENNESSEE

Memphis—Major Frank D. Smythe, M.R.C., 554 East St.
Nashville—Major Lucius E. Burch, Eve Bldg.

TEXAS

Austin—Capt. Albert F. Beverly, 311 W. 13th Street.
Dallas—Capt. Edgar W. Loomis, M.R.C., 236 Page Ave.
Ft. Bliss—Commanding Officer, Base Hospital.
Ft. Crockett—The Surgeon.
Ft. Sam Houston—Commanding Officer, Base Hospital.

VIRGINIA

Ft. Monroe—The Surgeon.
Norfolk—Lieut. Burnley Lankford, M.R.C., 530 Shirley Ave.
Richmond—Major Stuart McGuire, M.R.C., 513 Grace St., East, President.
Roanoke—Lieut. H. J. Hagan, M.R.C.
Washington—Major W. D. Webb, M.C., 1803 Connecticut Ave., N. W. (Univ. of Va.). Visits University of Virginia, Charlottesville, every Thursday.

WEST VIRGINIA

Charleston—Major John E. Cannaday, M.R.C., Capital City Bank.
Huntington—Capt. J. Ross Hunter, M.R.C.
Wheeling—Lieut. William H. McClain, M.R.C., 83 Twelfth St.

SOUTHERN MEDICAL NEWS

ALABAMA

At Birmingham, recently, the Board of Revenue, following a decision of the Supreme Court, recognized Dr. F. E. Harrington as the County Health Officer and began arranging appropriations for equipment of adequate facilities for carrying on the work.

At Talladega, it was announced recently that a unified health system was to be established in the county.

At Gadsden, there was a big health survey held recently under the direction of Dr. R. B. Hill, of the International Health Board. The campaign was an intensive survey of Etowah county.

At Montgomery, on June 14, was held a meeting of the Medical Section of the State Committee of National Defense. During the meeting it was announced that 236 physicians of the State had registered on the National registration.

Among the physicians of the State recently accepted for the Medical Officers' Reserve Corps are the following: Dr. O. V. Langley, Loachapoka; Dr. D. P. Dixon, Talladega; Dr. G. H. Moore, Opelika; Dr. J. A. Simms, Renfroe; Dr. F. H. McConnico, Montgomery; Dr. S. W. Wright, Bessemer; Dr. L. H. Ledbetter, Goodwater, and Dr. W. C. Dabney, Birmingham.

Dr. Frank G. Grace and Dr. Walter F. Scott, both of Birmingham, have been called into active service and ordered to the training camp at Fort Oglethorpe, Ga.

Dr. Seale Harris, of Birmingham, while attending the meeting of the American Medical Association in New York, became ill and was forced to undergo an operation for appendicitis. It is reported that he is recovering rapidly and it is expected that he will return to Birmingham during the early part of July.

Dr. J. S. McLester, of Birmingham, was operated on for appendicitis recently and is rapidly recovering from his illness.

(Continued on page 34)

SURGICAL IODINE

should be iodine—not a mixture of iodine and KI, like the U. S. P. Tincture, for instance.

Of course we make the official tincture, also two others—Churchill's and the N. F. decolorized. But they are not suitable for surgical use, for when solutions of them are "flooded over" an open wound the KI is deposited as a "crust" on the surface of the wound, where it irritates and also reduces the antiseptic activity of the iodine.

A properly made "Surgical Iodine" has no KI or other alkalies in it; and such an iodine product gives you the full amount of iodine antisepsis approved by the leading surgeons of America and Europe.

That exactly describes our "Surgodine;" would you like us to send you a sample from Baltimore?

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Wassermann Test $5.00

(Blood or Spinal Fluid)

We do the classical test. Any of the various modifications will be made upon request without additional charge.

Examination of Pathological Tissue $5.00

Accurate histological descriptions and diagnoses of tissues removed at operation should be part of the clinical record of all patients.

Autogenous Vaccines $5.00

All material received is cultured both aerobically and anaerobically.

Sterile containers, complete with instructions, for collecting all specimens sent gratis upon request.

National Pathological Laboratories

NEW YORK	CHICAGO	ST. LOUIS
18 E. 41st Street	5 S. Wabash Avenue	4485 Olive Street

(Continued from page 620)

Deaths

Dr. Felix Baldridge, Huntsville, aged 51, died at his home in that city on June 7.

Dr. P. M. Allison, Cullman, aged 40, died in Denver, Colo., on May 26.

Dr. J. M. Tubb, aged 66, died recently at his home in Bessemer.

Dr. Hugh W. Blair, Sheffield, after seriously wounding his wife, killed himself on June 12.

ARKANSAS

At DeWitt, during the recent annual meeting of the Modern Woodmen, Dr. J. R. Linzy was re-elected State Medical Examiner.

Dr. Thomas Dobbins, Humphrey, has been commissioned a first lieutenant in the Medical Corps of the Army.

Dr. William A. Dashiell, Little Rock, has been commissioned as first lieutenant in the Medical Officers' Reserve Corps of the United States Army.

Dr. Frank E. Hurrle, Little Rock, was married to Miss Mary Walker, of Pine Bluff, on April 17.

Dr. Sylvester Doggett, Bradford, was married to Miss Mae Thomas, Sheldon, Mo., on May 6.

Deaths

Dr. M. F. Gray, aged 63, died at his office in Cove on May 16.

Dr. L. J. Dorsey, aged 76, West Batesville, died at his home in that city on June 11.

DISTRICT OF COLUMBIA

At Washington, an ambulance company has been organized with Captain Ryan Deveraux, M. C., United States Army, in command.

Surgeon-General Gorgas, U. S. Army, recently authorized the following statement: "Reports from the several military departments indicate that the general health of the Army is normal—such as might be expected in time of peace."

According to a recent report of Surgeon-General Braisted, U.S.N., there were only 12 cases of serious illness among the 9,000 men at the Great Lakes Training Station at Chicago.

According to a recent report there have been a total of 573 cases of measles in the district, 182 of which were reported in the week ending June 2.

Dr. J. B. Henneberger, United States Army, was married to Miss Gabriella Lassell, Washington, on May 5.

Deaths

Dr. Harry Lane, Washington, aged 61, United States Senator from Oregon, died in San Francisco on May 3.

Dr. F. A. Norman, former Medical Examiner in the Pension Bureau, died at his home in Washington on June 3.

Dr. H. C. McLean, former Deputy Health Officer of the District, died at his residence in Washington on June 2.

FLORIDA

At a recent meeting, the new State Board of Health of Florida was organized with Chas. T. Frecker, Tampa, President. Dr. W. H. Cox, Brooksville, was elected State Health Officer.

At Jacksonville, the working force of the City Board of Health, has been reduced to one-half in number.

Dr. H. Mason Smith, Chattahoochee, was recently appointed Superintendent of the State Hospital for Insane.

Surgeon James Dykes, U.S.N., was in Jacksonville recently examining Navy recruits.

Dr. J. Y. Porter, former State Health Officer, who was a Lieutenant-Colonel (retired) of the United States Army, has been called into active service.

Dr. D. W. McMillan, M.O.R.C., left his home in Pensacola recently under orders from the War Department.

Dr. A. R. Bond, Tampa, recently commissioned Captain in the Medical Officers' Reserve Corps, is in Fort Oglethorpe, Ga., on active duty.

Dr. W. T. Elmore, M.O.R.C., is stationed at Fort Oglethorpe.

Deaths

Dr. J. F. McKinstry, aged 48, died at his home in Gainesville on June 13.

Dr. Etienne Lartigue, aged 46, died at his home in Gainesville on May 11.

GEORGIA

At Warm Springs, on July 10, 11 and 12, will be held the 1917 convention of the Chattahoochee Valley Medical Association with the following officers: President, Dr. B. L. Wyman, Birmingham, Ala.; Vice-President, Dr. W. A. Sellman, Atlanta, Ga.; Secretary-Treasurer, Dr. W. J. Love, Opelika, Ala.

At Rome, during a recent meeting of the Floyd County Medical Society, a resolution was passed asking for legislation favoring a state law on vital statistics and appropriation of funds sufficient for the operation of said law.

At Atlanta, it was announced recently that a large base hospital will be opened at Fort McPherson by the War Department.

At Fort McPherson, one of the three new medical training schools has been established by the Army.

At Atlanta, there has been recently established a large medical supply depot for the Department of the Southeast with Captain Wm. S. Shields, M.C., United States Army, in command.

Dr. Montague Boyd, Atlanta, is reported to have arrived safely in France with the Pershing expedition.

Dr. Mark E. Perkins, Millen, recently received his commission in the Medical Corps of the Army.

Drs. Chason and Chason, of Bainbridge, opened their new hospital, "Riverside," on Friday, June 22.

Deaths

Dr. W. T. Herring, aged 57, died at the home of his sister in LaGrange on May 29.

KENTUCKY

At Ashland, on June 2, the Eastern Kentucky Medical Association was organized with the fol-

(Continued on page 36)

Most Women Are Chronically Constipated

for all of the obvious reasons, plus those due to anatomic, neurologic, dietetic conditions—and "the procrastination habit."

In connection with other measures, (for **INTEROL** is what one writer would call a "dietetic accessory") **INTEROL** so facilitates passage of the intestinal contents that their journey is made easy, and the patient is trained to go to stool regularly.

Oftentimes, **INTEROL** proves a valuable adjunct in the treatment of female neurasthenia, which so often results (or is aggravated by) intestinal autotoxemia. Because (1) it reduces the length of time in which the fecal mass (with its toxins) remains in contact with the water-absorbing mucous membrane of the colon; (2) it holds these toxins in suspension; (3) it changes the bacterial surroundings—the "intestinal flora."

INTEROL is a ***particular kind*** of "mineral oil," and is not "taken from the same barrels as the rest of them": (1) there is no discoloration on the H_2SO_4 test—absolute freedom from "lighter" hydrocarbons—so that there can be no renal disturbance; (2) no dark discoloration on the lead-oxide-sodium-hydroxide test—absolute freedom from sulphur compounds—so that there can be no gastro-intestinal disturbance from this source; (3) no action on litmus—absolute neutrality; (4) no odor, even when heated; (5) no taste, even when warm. The most squeamish or sensitive woman can "take" **INTEROL.**

Pint bottles, druggists. **INTEROL** booklet on request; also literature on "Chronic Constipation of Women."

VAN HORN and SAWTELL, 15 and 17 East 40th Street, New York City

Chafing, Sunburn, Prickly Heat

—and similar afflictions—

are promptly relieved by

K-Y Lubricating Jelly.

Applied liberally to irritated or inflamed areas, the pronounced cooling and soothing action of this effective local remedy is at once manifest.

Water-soluble; non-greasy; "smells nice".
Collapsible tubes at Druggists.

Samples and literature to physicians only.

K-Y Lubricating Jelly
"Stops the itch without greasing the linen."

VAN HORN and SAWTELL
15 and 17 East 40th St., New York City

"Sick Headache"

—and other headaches—

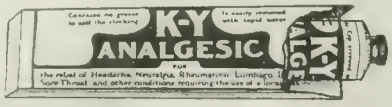
are usually relieved more or less promptly as you remove their cause. In the meantime—

K-Y ANALGESIC

locally "rubbed in," will usually afford comfort without blistering or soiling.

Gives Nature's Corrective Forces a Chance

No fat or grease. Samples and literature on request.
Water-soluble. Collapsible tubes, druggists, 50c.



VAN HORN and SAWTELL
15-17 East 40th Street, New York City

(Continued from page 34)

lowing officers: Dr. W. A. Bromley, Louisa, First Vice-President; Dr. Darwin Callahan, Prestonburg, Second Vice-President; Dr. J. P. Wells, Paintsville, Secretary-Treasurer.

Dr. R. Julian Estill, Louisville, a member of the Medical Reserve Corps, left for New York recently under orders from the War Department.

Dr. Lee Alexander Stone, formerly of Louisville, has received his commission as Captain in the Medical Officers' Reserve Corps of the United States Army.

Dr. W. H. Neel and Miss Terres Russell, both of Bowling Green, were married on April 18.

Deaths

Dr. A. C. Posey, aged 68, formerly of Henderson, died at his home in Oakland, Cal., recently.

Dr. T. P. Satterwhite, aged 82, died at his home in Louisville on June 3.

LOUISIANA

At the recent meeting of the State Medical Association, the New Orleans Medical and Surgical Journal was designated the official organ of the Association.

A state-wide campaign against malaria has recently been carried out by Surgeon H. R. Carter, U.S.P.H.S., and Dr. Frederick L. Hoffman, statistician of the Prudential Life Insurance Company, in company with the State authorities.

Captain T. C. Austin, M.C., United States Army, having finished his course of lectures on military surgery to the seniors of Tulane University, has left for St. Louis under orders from the War Department.

Assistant Surgeon E. W. Scott, formerly at New Orleans quarantine, has been ordered to proceed to the Marine Hospital, Baltimore.

Assistant Surgeon R. R. Sayers, U.S.P.H.S., has been ordered to New Orleans for duty in connection with plague eradicative measures.

It was announced recently that Louisiana had sent sixteen men to the different training camps for medical officers.

MARYLAND

According to a recent report of the Baltimore Board of Health, measles has led all the diseases in morbidity recently.

During the recent meeting of the Women's Medical Society of Maryland, held in Baltimore, the following officers were elected: President, Dr. Caroline B. Towles; Vice-President, Dr. Anna Abercrombie; Corresponding Secretary, Dr. Flora Pollack; Recording Secretary, Dr. Mary C. Willis; Treasurer, Dr. Mary F. Voeglein.

At Baltimore, on May 17, was held a great meeting for medical preparedness. Among the speakers were Assistant Surgeon-General W. C. Rucker, U.S.P.H.S.; Col. Thos. H. Goodwin, Service Medical Officer with the British Commission; Surgeon-General William C. Gorgas, United States Army, and Major Robert E. Noble, M.C., United States Army.

The Maryland Anti-Tuberculosis Association is endeavoring to obtain increased facilities for caring for the expected increase in the number of patients brought about by the war.

The Baltimore City Medical Society visited the District of Columbia Medical Society in Washington on May 16.

Dr. Edward V. Milholland has been recently appointed Chief Medical Examiner of the Baltimore and Ohio Railroad.

Dr. James A. Nydegger has been reassigned to the port of Baltimore.

At Baltimore, there has been formed a base hospital unit under the direction of Drs. Yeager and Frank Martin, and another unit is in the process of formation under direction of Dr. A. C. Harrison.

At Baltimore, a gift of $350,000 has been recently made by the Rockefeller Foundation to the Johns Hopkins Medical School.

Dr. Hugh H. Young, Baltimore, accompanied by three other urological surgeons, sailed for England on May 28.

The following officers in the Reserve Corps from Maryland are in active service: Drs. Thos. R. Chambers, M. M Owensby, D. P. Peters, E. S. Linthicum and L. J. Rosenthal, all of whom are at Fort Oglethorpe, Ga.

The following have been ordered to report to American ports for foreign service: Captain Stanhope Bayne-Jones, Lieutenant George L. Stickney, Lieutenant Everett L. Plass, Lieutenant W. L. Twigg.

The following Maryland physicians have been commissioned in the Medical Officers Reserve Corps: Dr. G. J. Heuer, Captain; Drs. F. J. Powers, J. E. Moore and E. G. Breeding, First Lieutenants.

Dr. A. M. Chesney and Miss Cora Chambers, both of Baltimore, were married recently in New York.

Dr. William George McCallum, of Columbia University, will be the new head of the Department of Pathology at Johns Hopkins. Dr. William H. Welch, former head of this department, gave up this work to accept the direction of the School of Hygiene and Public Health.

Deaths

Dr. J. B. Robinson, Brooklyn, Anne Arundal County, died recently at Johns Hopkins Hospital.

MISSISSIPPI

In Jones County, recently, there have been a number of cases of smallpox. According to the last reports, the contagion seemed to be spreading.

At Meridian, the Matty Hersee Charity Hospital, which was closed recently due to shortage of funds, has been reopened by a public subscription.

Dr. Leonard Hart, Meridian, was presented with a watch by his associates before taking his departure to Fort Logan H. Root.

Dr. W. R. McKinley and Dr. W. E. Richards, both of Columbus, are in the Medical Officers' Reserve Corps.

(Continued on page 38

Getting the Patient to take Nourishment

Sometimes the process of "building up" a convalescent is complicated by lack of appetite on his or her part. Food is either left untasted or is forced on an unwilling stomach that reacts sluggishly.

That is a case where food must be both dainty and nutritious—also light and easy of digestion. Bread foods, rolls, light biscuit and simple cake made with

ROYAL Baking Powder

make the "mouth water"—the first sign of healthful gastric excitation. They are so light that even the normal appetite will not overload the stomach with them; and yet, with butter, they carry the proteids, carbohydrates and fats necessary for putting on healthy flesh.

Made from Cream of Tartar derived from Grapes

Absolutely Pure

No Alum
No Phosphate

(Continued from page 36)

Deaths

Dr. O. H. P. Slaton, Sanatobia, died recently in Clarksdale, Ark.

Dr. William T. Matthews died at his home in Charleston on April 15.

MISSOURI

At St. Louis, Washington University will institute a laboratory of research in surgery, medicine and pediatrics. The foundation of this laboratory is made possible by the gift of $1,000,000 from the Rockefeller General Education Board.

At Hannibal, there has been founded a boys' "Get Fit Club," the object of which is to induce the boys of the city to have routine physical examinations and steps taken to correct any abnormalities. The physicians of the city have offered their services for examination free of charge.

At Springfield, the Frisco Medical Association met during the last few days in May. The following officers were elected for the ensuing year: President, Dr. J. A. Foltz, Fort Smith, Ark.; Vice-President, Dr. E. E. Liggett, Oswego, Kan.; Secretary-Treasurer, Dr. R. A. Woolsey, St. Louis. The next meeting of the Association will be held at St. Louis.

At Kansas City, Dr. George H. Tefft has resigned his position as President and member of the Board of Health.

At Kansas City, Dr. W. H. Coon, of Boston, has been appointed as Director of Public Health. Dr. Coon was formerly executive official of the infantile paralysis division of the Harvard Medical School.

Dr. B. E. Dawson, Kansas City, was recently elected to honorary membership in the Society of Science, Letters and Art, of London.

Dr. B. C. Thompson, Ferguson, was recently sentenced to one year in the penitentiary and fined $1,500 for violations of the Federal anti-narcotic law.

At St. Joseph, the Buchanan County Medical Society gave a farewell dinner to the physicians going into the Army service. The members leaving were Major O. C. Gebhart, Captain Thomas Lynch, Lieutenants Charles Greenburg, Otto Schmidt and Robert Crabtree.

Base Hospital Unit No. 21, recruited at the Barnes Hospital, St. Louis, has been ordered into active service.

Deaths

Dr. Cornelius O'Connor, aged 65, Kansas City, died in a St. Joseph hospital June 1.

Dr. L. A. Todd, St. Joseph, died suddenly while en route from Kansas City on May 22.

NORTH CAROLINA

At Asheville, an ambulance has been given to the American Ambulance Corps in France by Dr. and Mrs. Charles L. Minor.

OKLAHOMA

At Okmulgee, recently, U. S. P. H. S. Sanitary Engineer H. R. Crohurst was engaged in a general survey of the local water supplies.

The following doctors have been called into the Government service: First Fieutenants F. M. Sanger and A. M. Blesh, both of Oklahoma City; Drs. L. C. Kuykendall, McAlester; R. V. Smith, Tulsa; L. S. Willaur, McAllester, and Walter B. Bisbee, Chandler.

Deaths

Dr. Charles Blickensderfer, Shawnee, was killed in an automobile accident recently.

SOUTH CAROLINA

At the recent semi-annual meeting of the Seventh District Medical Association, held at Sumpter, the following officers were elected: President, Dr. Wm. Weston, Columbia; Secretary, Dr. Walter Cheyne, Sumpter. The September meeting will be held in Williamsburg.

Dr. I. H. Baggott, Columbia, has joined Red Cross Ambulance Company No. 26, stationed at Allenton, Pa.

At McCormick, there was recently held the annual meeting of the Third District Medical Association. The following officers were elected: President, Dr. R. M. Fuller, McCormick; Vice-President, Dr. Jesse H. Teague, Laurens, and Dr. James S. Fouche, Ninety-Six, Secretary-Treasurer.

Deaths

Dr. Henry P. Frost, a native of Charleston, and Superintendent of the Boston State Hospital at Mattapan, died in the Massachusetts General Hospital on May 23.

TENNESSEE

The Highland Sanitarium, situated in the suburbs of Nashville, recently opened under the supervision of Dr. A. E. Douglas, assisted by a staff of fifteen physicians of the city.

At Nashville, there was held a meeting of the State Board of Medical Examiners on June 15 and 16.

The following Tennessee physicians have been accepted in the Naval service: Dr. Joel J. White, John A. Turner, Thomas D. Baxter, J. B. Naive, Norman King, J. A. Fountain, T. H. Sharp, N. A. Bryan, N. F. Hudson, W. F. Harmon and R. P. Henderson.

The following physicians have been accepted for the Medical Officers' Reserve Corps and are under orders of the War Department: Dr. John B. Steele, Dr. A. T. Ingalls and Dr. G. M. Ellis, of Chattanooga; Dr. E. C. Calahan, Memphis; Dr. James Brew, Nashville; Dr. Leroy H. Hammond, Mt. Pleasant, and Dr. J. W. Morris, Fayetteville.

Dr. W. T. Hope, Chattanooga, was reported in a very serious condition recently following a stroke of paralysis.

Deaths

Dr. C. E. Lones, Knoxville, died at a local hospital on June 11 from injuries received in an automobile accident.

Dr. Samuel B. Boyd, aged 64, died on June 12 at his home in Knoxville.

(Continued on page 40)

TEMPERED GOLD Hypodermic Needles

possess the rigidity of steel without its brittleness or tendency to break.

A Distinct Advance in Hypodermic Asepsis

Rust-proof, germ-proof, acid-proof. Can not corrode under any conditions, climatic or otherwise. Durability practically unlimited. Sterilizable by all usual methods without injury.
One needle used for over 7,000 mercurial injections is still in perfect condition. An obvious economy.

If not obtainable of your dealer, we will send you a sample needle for $1.00, or a half dozen assorted sizes, up to one inch, for $4.50, post-paid.

Precious Metals Tempering Co.
WHITESTONE, L. I., N. Y.

Hay Fever

SUCCESSFULLY TREATED WITH

Bacterial Vaccines

Pollen irritation and breathing of the hot dust laden atmosphere favors the development of pyogenic bacteria in the respiratory tract which then becomes a primary factor of the disease.

Experience shows that the immunizing influence of an appropriate bacterin will either cure the disease or so modify it that it causes but little distress. Use Sherman's No. 40.

Write for Literature.

MANUFACTURER OF BACTERIAL VACCINES

G. H. SHERMAN, M.D.
Detroit, Mich. U.S.A.

Bran Flakes

Hidden In Dainties

Here is a bran food which folks will continue. The bran is hidden in luscious flakes of wheat.

No breakfast dainty is better liked than Pettijohn's. Yet it contains 25 per cent of flake bran.

With Pettijohn's Flour, it enables a constant bran diet, varied and appetizing.

This has become the favorite bran food, because it is natural, well-liked and efficient.

You will find it better than clear bran, better than any bran sweet.

You will find it an easy, welcome way to establish the bran habit.

Pettijohn's

Rolled Wheat with Bran Flakes

Soft, flavory wheat rolled into luscious flakes, hiding 25 per cent of unground bran. A famous breakfast dainty.

Pettijohn's Flour is 75 per cent fine patent flour mixed with 25 per cent tender bran flakes. To be used like Graham flour in any recipe; but better, because the bran is unground.

The Quaker Oats Company
Chicago
(1590)

(Continued from page 38)

Dr. Thomas B. Yancey, Memphis, died at a local hospital on May 31.

Dr. R. W. King, aged 70, died at his home in Gordonville on April 2.

TEXAS

At Dallas, the City Health Commission has cut the yearly budget of available funds. The decrease amounts to about $7,273.

At Dallas, May 7, the Texas Roentgen-Ray Society held its annual session. The following officers were elected: President, Dr. Rabun T. Wilson, Temple; Vice-President, Dr. Robert T. Millwee, Dallas; Secretary-Treasurer, Dr. John W. Torbett, Marlin (re-elected).

At Dallas, on May 9, was held the Association of the Former Presidents of the Texas Medical Association. The following officers were elected: President, Dr. Bacon Saunders, Fort Worth; Vice-President, Dr. S. C. Red, Houston; Secretary-Treasurer, Dr. J. D. Osborn, Cleburn.

At Leon Springs, it was made known recently that the medical reserve officers would not train there as had been previously reported.

The State Board of Medical Examiners met at Austin on June 19.

At Waco, the wives of the members of the McLenan County Medical Society met recently and formed an auxiliary association.

At Dallas, Dr. A. W. Carnes was recently appointed City Health Officer. His son, Dr. Campbell Carnes, will succeed him as physician to the Dallas County Farm.

Dr. E. L. Gilcreest, Dallas, is with the expeditionary forces in France.

The following Texas physicians have been accepted for service in the Reserve Corps: Drs. E. J. Britts, Cisco; J. T. Halsell, Laredo; E. W. Loomis, Dallas; C. H. McCollum, Fort Worth; F. A. Haggard, Fort Worth; E. R. Walker, Ballinger, and R. A. Olive, San Angelo.

Dr. A. M. Kahn and Dr. C. T. McGregor, Denison, are stationed at the coast defense station at New Orleans.

Deaths

Dr. J. W. Applewhite, aged 76, Gustine, died at Temple on May 5.

Dr. Henry Ingle, aged 80, died at his home in Gainesville on May 5.

VIRGINIA

At Richmond, the Preparedness Committee of the American Roentgen-Ray Society is preparing to establish a school of military Roentgenology. This is one of seven schools of its kind to be established in the United States.

At Charlottesville, there was recently organized the Albemarle Medical Society. The following were selected as officers: Dr. E. M. Magruder, President; Dr. W. D. Macon, Vice-President, and Dr. F. C. McCue, Secretary-Treasurer.

There has been a Social Economy School established at Richmond with the following physicians in the Faculty: Drs. Ennion G. Williams, Roy K. Flannagan, J. H. Smith, W. H. Higgins, McGuire Newton, and Aubrey Straus.

The Virginia Public Health Association, at a recent meeting at Lynchburg, elected the following officers for the ensuing year: President, Dr. W. B. Foster, Roanoke; Vice-President, Dr. C. B. Boyer, Stonega; and Secretary-Treasurer, Dr. Roy K. Flannagan, Richmond.

Dr. W. Reid Putney, who has for some time been connected with the State Epileptic Colony, has resigned to become Director of the Otterburn Springs Sanatorium, Amelia.

Dr. J. H. Ayres, Accomac, has been appointed to succeed Dr. J. N. Barney on the State Board of Medical Examiners, following the resignation of the latter upon entering the Medical Officers' Reserve Corps of the United States Army.

Dr. John W. Brown, Hampton, is reported to be a prisoner in a German detention camp. He was captured when his ship was torpedoed by a submarine.

Dr. J. L. McSparran, Graham, will sail for Japan on August 1 as a medical missionary.

The following Virginia physicians have entered the Medical Reserve Corps: Drs. Stuart McGuire, Richmond; T. F. Dodd, Alexandria; W. J. Chewning, The Plains; J. N. Barney, Fredericksburg; L. S. Early, F. W. Hains, J. B. Hallagan, J. B. Jones and H. A. Burk, Petersburg; W. A. Harris, Spottsylvania; Frank Hancock, Norfolk; Francis W. Upshur, Richmond; H. T. Hawkins, Irvington; Henry S. Stern, Richmond; L. J. Roper, Portsmouth; B. F. Eckles, Richmond; W. E. Knewstep, of Hampton; C. W. Waters, Hopewell; M. I. Mendeloff, Charleston, and Harry W. Keatley, Huntington.

Dr. R. B. Blackwell, Dr. C. B. Ransone and Dr. J. S. Yohannan have gone into the Naval Reserve Corps.

Dr. C. C. Coleman, Richmond, was married to Miss Julia Cone, of that city, recently.

Dr. C. B. Ransone, Port Haywood, Naval Reserve Corps, was married to Miss Natalie Neblett, South Hill, on May 15.

Deaths

Lewis B. Payne, Norfolk, died in Philadelphia on May 7. He was a senior student at Jefferson Medical College.

PLACEBOES

BOUGHT MEDICINE HIMSELF

"I've just been drugged and robbed," said he. "I think it is a shame!"

The officer just yawned and said: "What was the druggist's name?"—*Life.*

HIGH COST OF LIVING

"Isn't that a pretty big bill, doctor?"

"Well, living costs more than it used to, you know," returned the man of medicine.—*Life.*

(Continued on page 42)

Digestive Disturbances

in infants can usually be traced to faulty or improper food. These disagreeable conditions are successfully overcome by prescribing

Gail Borden
EAGLE
BRAND
CONDENSED
MILK
THE ORIGINAL

which is made from the highest quality of raw materials by the most modern and sanitary methods of manufacture —guaranteeing a finished product—that at all times is clean, wholesome and dependable for Infant Feeding.

Samples, Analysis, Feeding Charts in any language, and our 52-page book, "Baby's Welfare," will be mailed upon receipt of professional card.

Borden's Condensed Milk Company
"Leaders of Quality"
Est. 1857
NEW YORK

Extra-Fine Oat Food

Some folks still think that the best oats are imported.

But all the world over Quaker Oats dominates. Even in the British Isles—the home of Scotch and Irish oats—Quaker is the largest-selling brand.

All because we use the queen grains only. The puny, starved grains are omitted. We get but ten pounds of Quaker Oats from a bushel.

That's the secret of the wondrous flavor which holds millions to Quaker Oats. And that's the reason everyone should get them.

They cost no extra price.

10c and 25c Per Package
Except in Distant Sections

Quaker Oats

The Flavory Flakes

(1594)

(Continued from page 40)

BACILLI

Doctor—I am obliged to tell you, my dear lady, that the falling out of your youngster's hair is caused by bacilli.

Mother—Yes, doctor, I had thought of the same thing, as I have already found quite a number of them.—*Sonntagsgast.*

BAD EITHER WAY

Mr. Wiseguy—No, I don't want any of those sausages. I'm afraid of trichina.

The Butcher—I assure you there's no danger of trichina in these sausages.

Mr. Wiseguy—Well, hydrophobia, then. It's just as bad.—*The Doctor.*

NO WONDER

"Will Southwick, who was severely injured by the caving in of a sand pit last Friday, is reported to be getting along as well as could be expected under the circumstances. Dr. Fisk was called there Saturday morning."

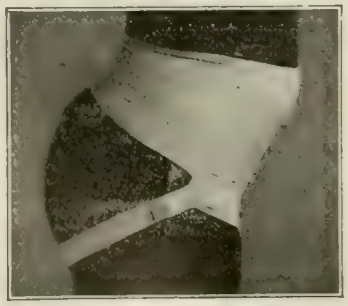
PENNY-WISE

There appears to be no good and valid reason why this story should be laid on a Scotchman except that such stories are always laid on Scotchmen.

A canny citizen of Dundee entered a chemist's shop and told the proprietor he wanted threepence worth of morphine. "What do you want it for?" asked the apothecary.

"Tuppence," answered the customer without a moment's hesitation.—*New York Globe.*

THE STORM BINDER AND
ABDOMINAL SUPPORTER
(Patented)



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ADAPTED TO USE OF MEN, WOMEN, CHILDREN AND BABIES
For Hernia, Relaxed [illegible] Articulations, Floating Kidney, Low and High Operations, Ptosis Pregnancy, Post [illegible] Obesity, Etc.
[illegible] new folder and [illegible] of physicians. General mail orders filled at Philadelphia only—within twenty-four hours
Katherine I. Storm, M D. 1541 Diamond Street PHILADELPHIA

THE PROMOTOR

"What can I do for you?" the physician asked the good woman who had entered his consulting room.

"I think I should have a commission," she returned, respectfully but firmly. "Every child in our street caught the measles from my baby."—*Youth's Companion.*

TRY GLUE

"My hair is coming out," said a man to his doctor. "Please give me something to keep it in."

"Well," said the doctor, "here's an old pill box. Will that do?"—*Exchange.*

CLASSIFIED ADVERTISEMENTS

BETTER COLLECTIONS FOR YOU, DOCTOR.—I have perfected a series of four letters that will collect most of your bills. These letters are written on your letter-head and over your signature. They are courteous; they are compelling and they are successful. They will collect your old bills and keep your new ones from getting old. During a year's test they have collected thousands of dollars. They have proved their worth. If you would increase your collections from 25 to 50 per cent., write me for particulars; or, pin a two-dollar bill to your letter-head, mail it to me and I will send you the copy of these four remarkable letters. Victor A. Smith, Letter Specialist, Rome, Georgia.

FOR SALE—Practice in the most beautiful town in the Ozarks. Population 5,000. In the heart of the fruit belt. Country thickly populated; good roads. Town has ten springs and is quite a health resort. Has a hospital. Practice pays $3,000.00. Have been here sixteen years; now desire to go East to put children in school. Fine opening for right man. Methodist preferred. Address Dr. J. Z. Sexton, Siloam Springs, Arkansas.

FOR SALE—Large static machine; good condition. A bargain. Address Mrs. C. H. Vaught, Richmond, Kentucky.

LOCUM TENENS—If you want to be relieved for a few days, a few weeks or longer, let me take care of your practice for you. Dr. J. G. Wilkinson, 1517 South Tenth avenue, Birmingham, Ala. Phone Main 7527-J.

A BURROUGHS FOR YOUR FIGURE WORK—No matter what line of business you are in there is a Burroughs Figuring Machine to fit your requirements. And the Burroughs best suited to your business will handle your figure work in less time and at a lower expense than is now required. Accuracy is assured, for the Burroughs cannot make a mistake. There are 98 models of Burroughs Bookkeeping Machines—suiting every type and size of business. A representative will gladly bring a machine to your place of business and show you how you can save on your bookkeeping expense. Burroughs Adding Machine Co., Detroit, Michigan.

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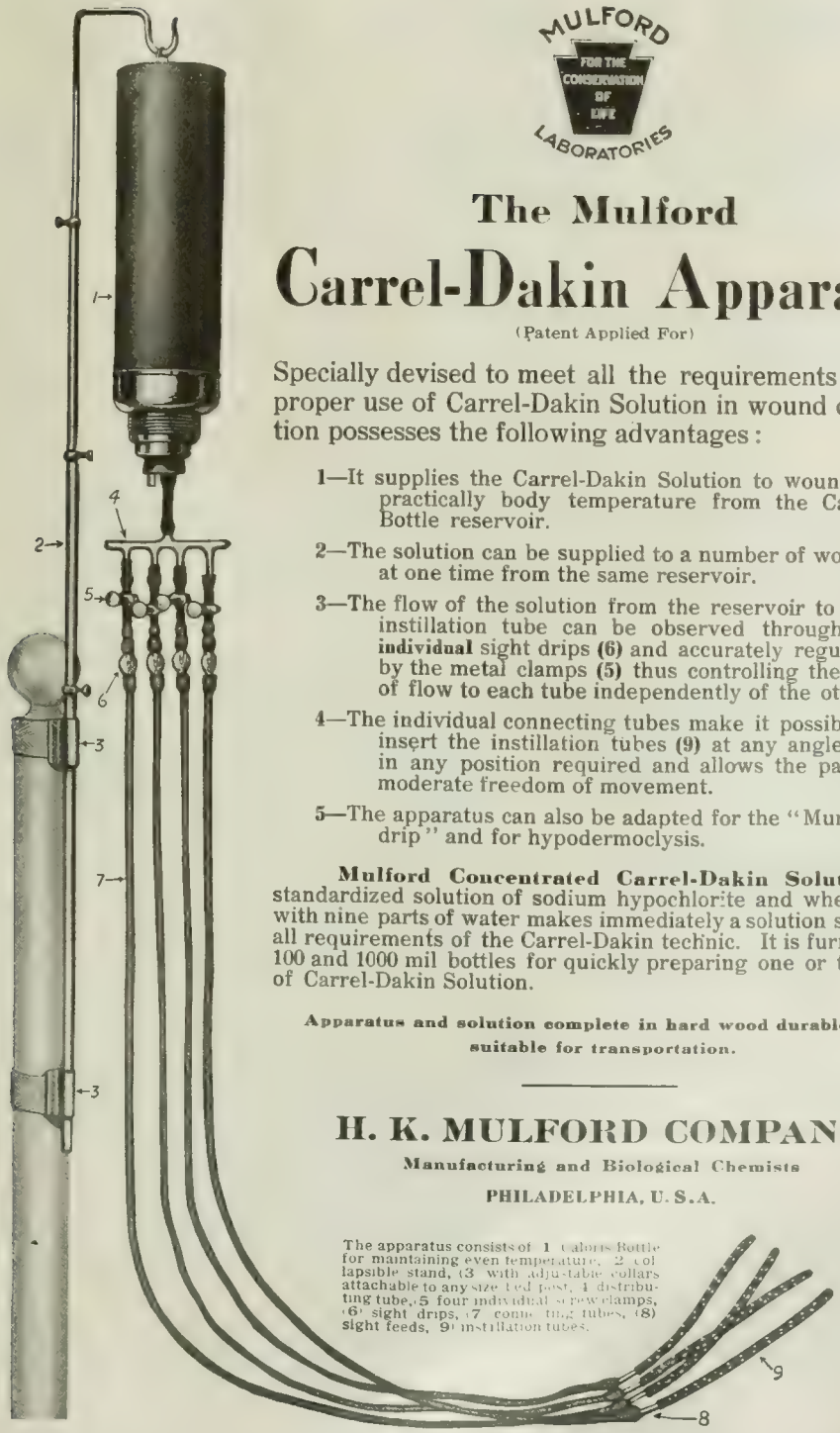

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FOR THE CONSERVATION OF LIFE
LABORATORIES

The Mulford

Carrel-Dakin Apparatus

(Patent Applied For)

Specially devised to meet all the requirements for the proper use of Carrel-Dakin Solution in wound disinfection possesses the following advantages:

1—It supplies the Carrel-Dakin Solution to wounds at practically body temperature from the Caloris Bottle reservoir.

2—The solution can be supplied to a number of wounds at one time from the same reservoir.

3—The flow of the solution from the reservoir to each instillation tube can be observed through the **individual** sight drips **(6)** and accurately regulated by the metal clamps **(5)** thus controlling the rate of flow to each tube independently of the others.

4—The individual connecting tubes make it possible to insert the instillation tubes **(9)** at any angle and in any position required and allows the patient moderate freedom of movement.

5—The apparatus can also be adapted for the "Murphy-drip" and for hypodermoclysis.

Mulford Concentrated Carrel-Dakin Solution is a standardized solution of sodium hypochlorite and when mixed with nine parts of water makes immediately a solution satisfying all requirements of the Carrel-Dakin technic. It is furnished in 100 and 1000 mil bottles for quickly preparing one or ten litres of Carrel-Dakin Solution.

Apparatus and solution complete in hard wood durable case, suitable for transportation.

The apparatus consists of 1 Caloris Bottle for maintaining even temperature, 2 collapsible stand, (3 with adjustable collars attachable to any size bed post, 4 distributing tube, 5 four individual screw clamps, (6) sight drips, (7 connecting tubes, (8) sight feeds, 9) instillation tubes.

H. K. MULFORD COMPANY

Manufacturing and Biological Chemists

PHILADELPHIA, U. S. A.

DAKIN SOLUTION

made according to the formulae used by Dr. Alexis Carrel at Hospital Militaire, No. 21 Compeigne, France
in one gallon jugs 85c, five gallon jugs, $4

See article by Dr. Lloyd Noland, Southern Medical Journal, December 1916, Page 1056
Reprint of article, and descriptive circular of apparatus mailed on request

WE WILL ACCEPT ORDERS AT ABOVE PRICES
TO BE SHIPPED THROUGH YOUR DRUGGIST

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Surgical Instruments, Hospital Supplies and Manufacturing Chemists

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"The spurious aspirin is a mixture of either calcium phosphate and starch, cream of tartar and citric acid with some alum; or milk sugar, starch and calcium acid phosphate."—(From **N. Y. Health Dept. "Weekly Bulletin,"** Nov. 6, 1915.)

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The trade mark "Aspirin" Reg. U. S. Pat. Office is a guarantee that the monoaceticacidester of salicylicacid is of the reliable **Bayer** manufacture

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Dr. Henry Froehling, of Froehling & Robertson, Chemists, Richmond, Va., on October 30, 1914, collected in person water from Stafford Springs from which to make an exhaustive test. A complete report has just been made on the water—a report that justifies all the claims made of Stafford Water by its many friends.

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1. All claims or suits for alleged civil malpractice, error or mistake, for which our contract holder,
2. Or his estate is sued, whether the act or omission was his own,
3. Or that of any other person (not necessarily an assistant or agent),
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The Inn is one and a half miles from the centre of Asheville, a city of 32,000. Eminent physicians and surgeons within call. Hydrotherapeutic treatment and massage. Milk and cream from Biltmore dairies; water from Mount Mitchell. Summer climate most agreeable and exhilarating. Altitude makes it cool. Blankets at night. Mosquitos unknown. For photographs and full information, call at the office of the Southern Railway.

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Tablets Glycerophosphates Compound P-M Co.

Each tablet contains:

Sodium Glycerophosphate 1 gr.
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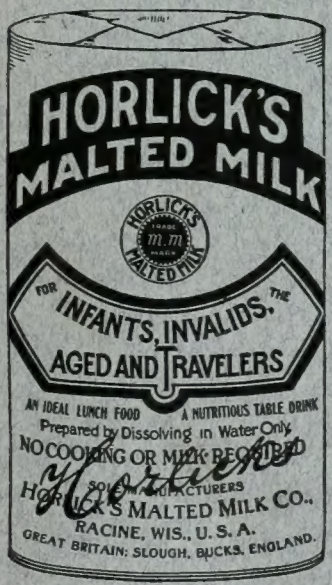

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